THE SIGNIFICANCE OF ABNORMALLY LOW TEMPERATURES.

T H E S I S.

Presented for the Degree of M.D., (Edinr. Univ.)

BY

RUTH MARY MONRO, M.B., Ch.B. (Edinr.)

March, 1933.

TABLE of CONTENTS.

I N T R O D U C T I O N.

The taking of temperatures is a routine custom in all hospitals. The temperature of every patient is taken and recorded at least twice a day, chiefly with a view to discovering which cases are febrile, and even slight pyrexia is carefully watched. Such patients are kept rigorously in bed, and the diet is limited until the temperature becomes normal again. A temperature below 98·4 is passed over as "normal", and no further interest is taken in it. In fact the thermometers and charts in general use in hospital wards do not record abnormally low temperatures, and these may easily be missed unless especially looked for.

Any departure from the normal must have some significance, and a very low temperature must be of as much consequence to the patient as a very high one. As a rule, the higher the pyrexia the more grave the outlook; similarly, the lower the subnormal temperature, the more detrimental to health and efficiency. But with the present system of temperature-taking, the lowest temperatures of all are habitually missed, and only the milder degrees of subnormal are detected.

In/

In one of the male wards of the Edinburgh Royal Infirmary, Professor Bramwell has for three years been using special thermometers for the detection of very low temperatures. The thermometers register as low as 90, and the temperatures are entered on charts with space for temperatures down to 92.

By the kindness of Professor Bramwell I have had the opportunity of studying the charts, the case-histories, and the patients in the wards, and I have analysed the records with a view to investigating the incidence and significance of subnormal temperature in disease and convalescence.

In the introductory chapter of his standard text-book, "The Principles of Human Physiology", Professor Starling says, "The adjustment of internal to external relations is only possible within strictly defined limits, limits which increase in extent with rise in type of organism, and the complexity of its powers of reaction Among the chief of these (limiting conditions) are temperature and the presence of food material and oxygen. Many organisms are killed by the alteration of only a few degrees in the temperature of their environment. Every shifting of a cold or warm/

warm current in the Atlantic in consequence of storms on the surface, leads to the destruction of myriads of fish and other denizens of the sea. In the higher animals a greater stability in the face of such changes has been accomplished by the development of a heat-regulating mechanism, so that, provided sufficient food is available, the body temperature is maintained at a constant level, which represents the optimum for the discharge of normal functions of the constituent parts of the body".

He deals with the regulation of body temperature in a later chapter. Evolution of heat is common to all living organisms, and the rate of metabolism is proportional to the temperature of the animal; this is universally the case in cold and warm-blooded animals. The former are protected from excessive heat production in a high external temperature by having moist skins, and with the rise of external temperature the rate of evaporation is increased, but most of them have to escape from any extreme rise by burrowing underground or taking to the water. "An animal whose metabolism is more or less independent of the surrounding temperature must have great advantages over an animal/

animal liable to have his activities reduced and paralysed by a spell of cold weather; the greater independence of environment, which is characteristic of elevation of type, has been achieved by the warm-blooded animals including man".

There are limits, however, to the powers of the organism to regulate its temperature, both when there is excessive heat formation in the body, and when there are severe alterations in the temperature of the surrounding medium. Muscular exercise and the taking of food raise the body temperature, but "such a rise is merely temporary in its effect, and insignificant in comparison with the wonderful uniformity of temperature observed in men of all races and of all climes under most varying circumstances of food and activity". Exposure to extreme heat may cause a rise of temperature, and exposure to external cold, or immersion in a cold bath, or loss of heat by absence of clothes, may lead to a fall of temperature. "This fall of temperature in the higher animals is very soon followed by paralysis of the higher centres and loss of consciousness. The centres in the medulla are later affected, so that respiration is slowed and the blood-pressure falls".

These extracts are quoted in brief to emphasise the significance of body temperature, and the fact that temperature is as vital to the well-being and efficiency of the animal as are food supply and oxygen.

Heat production is mainly associated with oxidation, and all the organs of the body participate, though the most effective are the skeletal muscles. Even during rest they are the seat of oxidative processes and therefore of heat formation, and these are increased with every contraction. The glands of the body, in proportion to their size, are even more active heat producers, and it is said that the liver and the blood flowing from it have a higher temperature than any other part of the body.

The skeletal muscles, if severed from their connection with the central nervous system, become atrophied and flaccid. Heat production is thus dependent on their connection with the nervous system, and if this connection be abolished the animal reacts like a cold-blooded animal. The total metabolism and heat production of the body sink to a minimum, and are diminished by application of cold, and increased by application of warmth to the surface/

surface of the body. On the other hand, in the intact animal changes of temperature provoke reflexly changes in the opposite direction, so that exposure to cold increases heat production, and to heat diminishes it.

The regulation of heat loss is equally important. As a rule the temperature of warm-blooded animals is higher than that of their environment, so that there is constant loss of heat by convection Excessive loss is guarded against by fur, feathers, or a thick layer of subcutaneous fat; in man by clothing. Heat may also be lost by radiation through contact with colder bodies. This is diminished by clothing and by an increase of watery vapour in the air. Since loss of heat depends largely on the difference of temperature between the surface of the body and the environment, it will be affected by the temperature of the skin and therefore by the amount of blood flowing through the skin vessels. Thus in cold weather or when heat production is low, the skin vessels are contracted and heat loss is small, but if the temperature of the environment is high, the cutaneous vessels dilate, the skin is warm, and heat loss is increased. The regulation of the vasomotor nerves is under/

under the control of the central nervous system, so that the central nervous system takes part in the regulation of both heat formation and heat loss.

Loss of heat by convection and radiation can only occur when the temperature of the environment is lower than that of the body. The body temperature can be maintained, however, in an atmosphere whose temperature is far above 37C., in spite of the fact that heat formation is still going on. There is profuse secretion of sweat, and by evaporation a large amount of heat is abstracted from the body, which is thus kept at a temperature below that of the surrounding atmosphere. The secretion of sweat is also controlled by the central nervous system.

The nervous mechanism for heat regulation leads to an accurate balance between heat formation and heat loss. Starling considers that the existence of a special heat-regulating centre is doubtful, but other observers have found that injuries of the corpus striatum cause a rise of temperature associated both with increase of heat formation and of heat loss. On the other hand lesions of the pons may cause increased heat production/

production without compensatory heat loss, so that death from hyper-pyrexia results. It has been suggested that the thermogenic centre, regulating heat production, is situated at a lower level than the thermotaxic, which presides over and determines the balance between heat production and heat loss.

This balance is disordered in fever. Proressor McDowall, in his book, "The Science of Signs and Symptoms", has a short discussion on fever, which may be the consequence of increased heat production or of diminished heat loss. The former alone cannot raise the body temperature for fever does not occur in a disease like exophthalmic goitre, in which the metabolic rate and heat production are much increased. But there is no doubt that in fever heat loss is diminished. At the onset of a febrile attack there is a diminished flow of blood to the skin, and the patient looks pale; as the process advances, there is a feeling of chill, the skin is pale or even blue, and there may be actual shivering though the temperature is already raised. With the rise in temperature the metabolic rate is increased, and more heat is produced. There comes a point when the effects of high temperature get the upper hand, and the skin mechanisms for loss

of/

of heat come into play. The skin becomes hot and at first dry; later there is an out-pouring of sweat and a fall in temperature.

In the same chapter there is a short account of low temperature, which is said to be a rarer state than fever, and usually the result of diminished heat production. In the lowered basal metabolism of myxoedema heat production is low, also in any debilitating condition and in old age. A low temperature from excessive heat loss is seen in alcoholism and in chronic moist skin conditions. In alcoholism there is often a pleasant feeling of warmth, owing to paralysis of the skin vessels, which remain dilated in spite of excessive heat loss. The cutaneous vessels are also paralysed after a hot bath, and the tendency to chill in both these circumstances is well known. Localised lowering of temperature may also predispose to infection by reducing vitality, as is seen in cases of chills or infections following on wet feet or wet clothing. On the other hand, local warmth is effective in raising the temperature, and there is evidence that the anti-bacterial power of the blood is increased when the body temperature is raised.

While the effects of fever on the body

are well known, much less attention has been paid to subnormal temperature and its consequences. All standard medical text-books devote some pages to a description of pyrexia, but say little or nothing about subnormal temperature in connection with disease; yet the effects of local and general lowering of the body temperature are known to be harmful. A very low temperature in disease must indicate some failure in the heat-regulating mechanism and cannot be "the optimum for the discharge of the normal functions of the constituent parts of the body".

Professor Murray Lyon and Dr. H.L. Wallace have published a paper entitled "The Mean Temperature in Non-febrile Hospital Patients", discussing the normal temperature in health and illness. By references to the literature on body temperature they show that 98·4 may be accepted as the normal in healthy active persons, but that it is too high for patients confined to bed for long periods. They refer to the fact that non-febrile patients and those convalescent after febrile illnesses frequently show persistently low temperatures while lying in bed. An endeavour was made to determine the average temperature in such cases and/

and for this purpose the temperatures of 250 selected cases were investigated. They were observed for a period of 14 days in each case, during which time the patients were kept in bed. The temperatures were taken in the routine method in use in a large hospital, namely, at 7 o'clock morning and evening, in the closed axilla, with half-minute instruments left in position for three minutes. In this series of cases the mean temperature was found to be 97·2 in the morning and 97·45 in the evening, the average for the two being 97·32 or slightly more than a degree below the accepted normal temperature reading.

While analysing the charts in Professor Bramwell's ward I have been struck with the constancy with which febrile and non-febrile temperatures settle to a level between 97 and 98. In the great majority of cases the normal temperature for convalescents is about this figure, and this is quite in accord with Professor Murray Lyon's findings.

At the same time by means of the special thermometers in daily use, I am convinced that subnormal temperatures occur much more frequently than is generally supposed. In some cases a low temperature is a definite feature of the disease under treatment, while in others the falls to subnormal are accidental and not essentially part of the disease.

THE METHOD OF TAKING TEMPERATURES.

The method of taking temperatures in Professor Bramwell's ward was identical with that employed in Professor Murray Lyon's series, except for the difference in thermometers and charts, and for the checking up of all very low temperatures. Further, the cases were not selected, but the temperatures of all patients admitted to the ward were taken and recorded in this way.

The thermometers record temperatures as low as 90, and there is space on the charts to enter temperatures down to 92.

The temperatures are taken at 7 o'clock morning and evening by the nurses on duty. The thermometers are one-minute instruments, and are kept in the closed axilla for three minutes. Care is taken that the axilla is as dry as possible, especially incases with much sweating, and that the thermometer is in close apposition with the skin. Every very low temperature is reported to the Sister or the staff-nurse and is taken again. Should there be any doubt the temperature is taken yet again with another thermometer. This checking-up system is very thorough and all sources of error have been eliminated as far as possible.

GENERAL DISCUSSION OF CLINICAL MATERIAL.

The material on which this thesis is based consists of the complete clinical records of 1277 patients, and covers a period of three years, from February 1st., 1930 to January 31st., 1933. Of these 1277 cases, 437 or 34·2% had temperatures of 96 or lower at some stage of illness or convalescence, and for convenience they are hereafter referred to as the subnormal group. The remaining 840 or 64·8% never had temperatures of 96 or less while under observation, and are styled the control group.

In analysing the charts I have taken 96 as being the upper limit of subnormal temperature. It is definitely subnormal, being 2·4 degrees below theoratical normal and 1·32 degrees below Professor Murray Lyon's average normal temperature for patients lying in bed. The word "subnormal" hereafter refers only to temperatures of 96 or lower; while "normal" refers to those about 96 but not above 98·4, and "pyrexia" to temperatures above 98·4.

The figure 96 is somewhat arbitrary, as a temperature of, say 96·2 is of practically the same significance as one of 96, yet the former is counted/

counted as normal and the latter as subnormal. But a fixed standard of temperature was found to be essential in classifying the temperatures and 96 was determined on as being unquestionably subnormal.

The temperature was taken four-hourly only in febrile cases, during pyrexia and for a few days afterwards. Of the 225 patients who had four-hourly charts, 60 at some time had subnormal temperatures and 165 did not. The latter include those who died during pyrexia or were transferred to a surgical ward for operation.

In only four cases was the temperature subnormal on the four-hourly chart and not on the daily chart, and three of these were cases of malaria. The fourth was one of chronic bronchitis and emphysema. In one case of lobar pneumonia the temperature was lower on the four-hourly than on the daily chart. The evidence, so far as it goes, indicates that the lowest temperatures are most likely to occur about the hours for taking the daily records, that is, at 7 o'clock in the mornings and evenings.

A subnormal temperature was rather more frequently noted in the morning than in the evening, but in many cases the opposite was the rule. An

evening/

evening fall was not especially characteristic of any disease, but was observed fairly often in diabetes mellitus and pulmonary tuberculosis, as if the effort of the day was too much for disordered metabolism and extreme debility. This evening fall however, was by no means constant.

Attempts to correlate the pulse-rate with the temperature were unsuccessful. At certain stages of certain diseases, notably acute diseases of the respiratory system, a fall in temperature to subnormal was almost invariably associated with a fall in pulse-rate. In some cases of intra-cranial disease, such as cerebral haemorrhage and thrombosis the temperature was often very low indeed, while the pulse was very rapid or uncountable, but in the majority of cases a low temperature might be accompanied by a rise in pulse-rate, or by a fall, or by no appreciable change. In the accidental falls so often observed in convalescents, the pulse-rate hardly varied, and the temperature seemed to be more sensitive than the pulse in recording the minor upsets of convalescence.

I have also tried to correlate symptoms with subnormal temperature by comparing the progress notes with the charts, and by questioning patients who/

who were exhibiting falls of temperature. In many cases I obtained a history of pain, headache, sleeplessness, fatigue, hunger, or purgation; in others no factor could be discovered.

There were great variations in the types of subnormal temperature. In some cases the temperature fell to subnormal at some definite stage of illness, and then returned to normal. In others the temperature was low for long periods, sometimes for weeks together. This might be followed by a rise to normal, or the subnormal temperature might persist until discharge. In a large number there were occasional falls to subnormal, which appeared to be accidental and not necessarily part of the disease.

Subnormal temperatures are peculiar to no disease. The same diseases are found in both groups, but frequently some factor can be demonstrated to have an influence on the course of temperature.

In order to describe a temperature intelligibly and concisely I have classified the types of subnormal temperature under the following headings, more or less in accordance with the terms in use in describing the variations of fever.

1./

1. REGULAR SUBNORMAL, with a daily variation of not more than one degree.
2. IRREGULAR SUBNORMAL, with no great daily variation, but with a tendency to range up and down, often with a marked rise or fall spread over several days.
3. SWINGING SUBNORMAL, with a daily variation of about two degrees.
4. HECTIC SUBNORMAL, with a daily variation of three degrees or more.
5. OCCASIONAL FALLS, to subnormal from normal on isolated occasions.

Also for the sake of convenience I have grouped all cases according to the system affected by disease. In the case of patients suffering from more than one complaint, the record is included under the disease for which the patient was admitted.

From a study of these 1277 charts I have formed the following general conclusions.

a. The average normal temperature for non-febrile hospital patients is between 97 and 98. This is in accordance with Professor Murray Lyon's figures.
b. Subnormal temperatures are an integral part/

part of certain diseases. Persistently low temperatures occur in cases of chronic myocardial disease, in chronic nephritis, in cerebral vascular lesions, in diabetes mellitus, in diseases with muscular wasting, and in some non-febrile diseases with pain. A steady fall was observed in starvation states, such as bulbar palsy, extreme vomiting, or rectal feeding. A fall after pyrexia was a common feature in acute respiratory diseases and in malaria. In chronic pulmonary tuberculosis and in bronchiectasis a very low and hectic temperature is as characteristic as the high swinging temperature of the acute stage.

c. Occasional falls to subnormal may occur in almost any non-febrile illness or during convalescence. These are accidental and not part of the disease under treatment, but may frequently be traced to some passing disturbance.

d. Subnormal temperatures are not characteristic of certain conditions in which they might be expected. A low temperature is not a sign of impending death, nor does it/

it accompany haemorrhage. Wasting diseases such as tuberculosis and malignant disease more commonly show a febrile reaction though subnormal temperatures did occur in these conditions.

All these conclusions are fully discussed in the subsequent analysis of the case records and temperature charts.

DISEASES OF THE RESPIRATORY SYSTEM.

217 cases were admitted for treatment of diseases of the respiratory system; and of these 59 were in the subnormal group, and 158 in the control group.

D E A T H S.

There were 3 deaths in the subnormal group, and 40 in the control group. In the latter group 37 died during pyrexia, and 3 of non-febrile conditions, 2 of chronic bronchitis and emphysema, and one of pleurisy with effusion.

One of the fatal cases in the subnormal group (No. 8369)really belongs to the controls as far as his respiratory disease is concerned. This was a case of bronchiectasis, who ran a swinging febrile temperature for ten weeks, and then developed signs of a brain abscess. From the onset of cerebral signs, the temperature fell rapidly; the day before death it was 96; and on the day of death it fell to 95.6. This fall was due rather to the intra-cranial complication than to the respiratory disease./

disease.

The other fatal cases in the subnormal group were both admitted in a dying state. No.7199 had been very drunk the previous night, and was admitted chilled and comatose, with signs of right-sided lobar pneumonia. The temperature was 95, and did not rise before death 6 hours later. No. 7303 was a case of long-standing chronic bronchitis and emphysema, who had recently had an acute exacerbation and was admitted in a state of collapse, cyanosed, drowsy, and nearly pulseless. On admission the temperature was 96 morning and evening; and the second day 95. He died on the third morning with a temperature of 98.4.

LOBAR PNEUMONIA.

The charts of the 71 cases of lobar pneumonia show several interesting points. 54 were included in the control group, and 17 in the subnormal group. 17 of the controls died during pyrexia, and one subnormal, (No. 7199 already described), died with a temperature of 95.

Of the remaining 53 one had no crisis but a fall by lysis according to the progress notes; in

52/

52 a crisis occurred. Without exception the crisis occurred during the night, and the temperature was down in the morning. This observation was supported by the ward Sister, who said she had never seen a crisis in pneumonia during the day. It is difficult to understand why such a uniformity of time incidence should exist. Apparently it has no relation to the hour of onset, to the severity of the infection, or to the duration of the illness, but occurred equally in the abortive cases with crises on the third day, and in the severe cases whose crises happened on the 7th. to the 10th. day.

Prof. Patrick of Dundee in an address to the Association of Physicians discussed a second fall of temperature to subnormal after the crisis, as though the crisis were not the end of the temperature changes associated with the crisis. In 12 cases in this series this second fall was clearly shown on the chart, and the chart of No. 6480 is reproduced as a good illustration. Within 24 to 48 hours after the crisis there was a fall to 96 or 95.4 with, in most cases, a further fall of pulse rate. In 3 others the second fall was later, from 3 to 5 days after the crisis, and of these the chart of No. 6582/

No. 6582 is an example. The crisis on the 9th. day brought the temperature down to 98; on the 10th. day there was a slight rise to 98.4, and then a steady fall to 96 on the 12th. evening. This case also showed marked instability of temperature during convalescence, with frequent falls to subnormal after aperients and after first getting up, and the temperature did not become steady until the 5th. week, when an aperient had no effect.

The second fall was also observed in many of the control group, though it was less marked. At the crisis the temperature fell to 98.4 or even 99, and the second fall was only to 96.4 or 97. The same process was evidently going on, but with the higher temperature at the crisis, the second fall reached to a corresponding level. As this was above 96 they are not included in the subnormal group, th though they do confirm Professor Patrick's observations on the second fall in lobar pneumonia.

One case in the subnormal group (No.8165) showed a strikingly different temperature reaction, and the chart is reproduced here. He was not very ill, but had signs of a left-sided basal pneumonia. According to the notes on the case no crisis occurred but/

but the temperature fell by lysis and convalescence was uneventful. A glance at the chart, however, shows that some sort of crisis did occur on the 8th. day, when the temperature fell from 99 in the morning to 95 at night. This form of crisis was quite exceptional, as it happened during the daytime, without the usual phenomena of the crisis, and the fall was from very slight pyrexia to a low subnormal level. There was no second fall, and the temperature rose steadily to normal, and remained at a normal level throughout convalescence.

BRONCHOPNEUMONIA.

Only 6 cases of bronchopneumonia were admitted during three years, 2 in the subnormal group, and 4 in the control group. There was nothing remarkable about the charts of the controls as their temperatures fell by lysis and soon settled to normal. The two in the subnormal group were seriously ill. No. 6662, whose chart is reproduced, had been ill for 5 days and was admitted in a critical condition, but improved rapidly. The temperature fell by lysis from 100 on admission to 95 on the 10th. morning, and remained subnormal for 9 days. Only at the end of the/

the 3rd. week did the temperature rise to normal. The second case was similar in history and course of temperature; the remarkable feature of both cases was the prolonged period of subnormal temperature.

INFLUENZA and INFLUENZAL PNEUMONIA.

There were no cases of influenzal pneumonia in the subnormal group, and 4 in the control group, of whom 2 died. 8 cases of influenza were admitted to the ward, 4 subnormals and 4 controls. 2 of the controls developed delirium tremens, and were transferred to another ward during pyrexia; the other two became normal by lysis, and their temperatures remained normal thereafter . In the cases of the 4 subnormals, the temperature fell by lysis, first to normal and then to subnormal with a further fall of pulse rate, and then rose steadily to normal. The chart of No. 8583 is included as a typical illustration. A good many patients had attacks of influenza while in the ward, but they are not included here as other factors were present, which might have some effect on the course of temperature/

temperature.

UNRESOLVED PNEUMONIA.

There were 2 cases of unresolved pneumonia in the subnormal group and 4 in the control group. All were admitted some time after the original attack, and all developed empyema. The 4 controls had high pyrexia, and were transferred to surgical wards, while the 2 subnormals were treated with repeated aspiration. No. 7552 had a swinging subnormal temperature, between 96 and 98 for a week after drainage of a loculated empyema, and then settled to normal. No. 7767 was slightly febrile for 9 days; on the 10th. evening after aspiration there was a sudden fall to 96. After this he recovered rapidly, and the temperature remained normal except for a fall to 95.8 on the morning of discharge. In this case the fall to subnormal also coincided with evacuation of pus, though it was less prolonged than in the previous case.

PULMONARY TUBERCULOSIS.

In the control group there were 23 cases of pulmonary tuberculosis, all of whom were febrile, 5 of them died in hospital, 6 went home, and 12 were transferred/

transferred to sanatoria during pyrexia.

In the subnormal group there were only 9 cases, of whom 5 were recent cases, while 4 were old cases of chronic disease. 4 of the recent cases were admitted on account of haemoptysis, and were febrile at some stage. They all show the remarkable way in which the temperature keeps up to or above normal during haemorrhage, while there may or may not be a subsequent fall to subnormal. The chart of No. 8582 is reproduced to illustrate this peculiar fact. The 5th. recent case had a high temperature with two morning falls to subnormal after aperients, and was not truly subnormal.

The 4 old-standing cases were more interesting. No. 7393 was admitted while running a swinging subnormal temperature, between 95 and 97, but shortly afterwards developed a high swinging temperature, and was transferred to a sanatorium. The other three had very low swinging temperatures, often hectic, which, if recorded above the normal line, would constitute a grave pyrexia.

In addition I was able to follow up a few cases during sanatorium treatment, and the charts of 4 are here reproduced, as being most interesting and instructive./

instructive. The temperatures were taken and recorded with the same precautions as those in the medical ward.

T.L. was a man of 41, with a fairly recent onset, who was at the end of the febrile stage. His chart shows how the temperature, while beginning to fall to subnormal, was easily raised to fever by trifling upsets, the former being a gastro-intestinal disturbance, and the second a common cold. Before the latter the temperature was falling gradually to 95. P.C. was still at the febrile stage, though getting over it. The chart shows how surprisingly low the temperature may fall between the febrile rises; and also what a swing there may be in a few hours. On one occasion the temperature rose from 94.6 to 99.4 or nearly 5 degrees in 12 hours. J.L. and J.M. were cases of fibroid phthisis, and the latter also had a tuberculous infection of the larynx. They both had very low and very persistent subnormal temperatures, frequently touching 94, and in the case of J.M. even lower, and in both there was a tendency to great daily variations.

This swinging subnormal temperature seems to be characteristic of chronic tuberculosis, just as/

as a swinging febrile temperature is characteristic of recent active disease. Also as the persistence of high temperature in doubtful cases is taken as strong evidence of tuberculosis, so also a low swinging temperature may be evidence of chronic disease, and thus may prove to be a really helpful diagnostic point in difficult cases.

B R O N C H I T I S.

In the control group there were 2 acute and 8 chronic cases of bronchitis, while in the subnormal group there were no acute and 10 chronic cases.

The 2 acute cases were febrile until their temperatures became normal by lysis. The 8 chronic cases in the control group were inclined to be slightly febrile, especially at night. 5 of the subnormals showed a similar tendency to slight pyrexia, with occasional falls to 95 or 96, with or without apparent cause. That is to say, 13 out of 18 comparable cases showed no tendency to run a subnormal course. The remaining 5 were different. No. 7303 as already described, was admitted in a moribund state, and died after running a subnormal temperature/

temperature for two days. Three others, (6511, 6535, 6615) were febrile on admission and then ran a a low swinging temperature. All were old cases with a considerable degree of emphysema and heart failure, and the latter was probably an essential factor in bringing about a persistently low temperature.

No. 6548 was different in another respect, and his chart is included in explanation. His temperature was a persistently hectic subnormal, with a daily variation of even 4 degrees. Such a chart would be regarded as very serious if recorded above the normal line, but with ordinary methods of temperature taking the instability of temperature would not have been noted. He had been gassed in the war, and had had a cough with sputum ever since. Recently he had been getting worse, and tuberculosis was suspected. The physical signs, however, were not definite, the X-ray was suspicious but not convincing, and the sputum was negative on repeated examination; so the provisional diagnosis of chronic bronchitis was not altered. A comparison of this chart with the other cases of chronic bronchitis shows a striking dissimilarity; but instead there/

there is a definite resemblance to charts of chronic tuberculosis and bronchiectasis. This raises the question whether, in cases of suspected tuberculosis with insufficient evidence for complete certainty, a hectic subnormal temperature may not be adduced as additional evidence; or whether a lipiodal examination to reveal a bronchiectasis should not be done.

BRONCHIECTASIS.

There were 4 cases of bronchiectasis in the subnormal group and 2 in the control group. Of the latter, one died during pyrexia, and the other was febrile during most of the time, but improved before discharge. One of the subnormals, No. 8369, as already mentioned, should really belong to the control group, as he ran a swinging temperature for 10 weeks, and the fall to subnormal before death was probably entirely due to the presence of a cerebral abscess. No. 7497 ran a normal temperature with one incidental fall to 96. Nos. 6503 and 6610, both of whose charts are reproduced, ran hectic subnormal temperatures, with pyrexia and subnormal alternating. The greatest daily variation/

variation observed in the whole series was in No. 6610's chart, which on one occasion showed a rise from 95 in the morning to 101.4 at night.

P L E U R I S Y.

There were 22 cases of pleurisy among the controls, most of whom were febrile, and many of whom were probably tuberculous though positive proof was lacking. Only 8 cases of pleurisy occurred in the subnormal group; of these 5 were febrile settling to normal with occasional falls to 95 or 96; (Nos. 6596, 6630, 7250, 7292, 7774.) The other three, (Nos. 6564, 6621, 8580), were also febrile, with a marked fall to subnormal after pyrexia was over. No. 6621, whose chart is included, had been ill for several weeks with high fever, and was sent into hospital just at the end of the febrile stage. His temperature had not risen again to normal before discharge in the second week. The prolonged subnormal temperature in these cases of pleurisy was very similar to some of the bronchopneumonia charts.

A S T H M A.

There were 14 cases of asthma in all, 11 controls/

controls and 3 subnormals. Among the controls all the temperatures were regularly normal; but the 3 subnormals were all different. No. 6535 ran a fairly regular subnormal temperature throughout, and had no attacks in the ward. No. 7317 had a normal temperature with two morning falls to 95 and 96, which had no relation to the attacks. In the case of No. 6636 there did seem to be a connection between the low temperature and the frequency of the attacks. This patient was a child of 9, who had had asthma for 6 years and was becoming incapacitated by nightly attacks. For the first 6 days he was treated with adrenalin with no relief; he had 12 asthmatic attacks, and the temperature was an irregular subnormal ranging between 95 and 98. He was then tried with lobelia, with some benefit, as he had 4 attacks in 4 days, and the temperature rose a little and was more regular between 96 and 97. He was then given ephedrine for three weeks, and improved very much. There were 9 slight attacks in the 3 weeks, the general health improved, and the temperature was inclined to settle between 97 and 98. There was some instability of temperature, however, as there were several falls after first getting up, but/

but in the 4th. week the temperature became regular between 97 and 98.

OTHER CONDITIONS.

One case of pulmonary neoplasm (No. 6514) ran a swinging subnormal temperature between 96 and 98 for two weeks falling to between 95 and 97 in the third. This chart was a striking contrast to those of the other 8 cases of tumour of the lung, all of whom had a swinging febrile temperatures.

There was also one case of mediastinal tumour, No. 6552, who had occasional falls to subnormal during a swinging pyrexia, 3 other cases in the control group were also febrile.

One case of streptothrix of the lung (6572) was also febrile with incidental falls to 96.

One case of recurrent empyema was readmitted for a relapse 4 months after operation. The temperature was normal until the empyema was adequately drained, when it fell to 96 for two weeks, and though it was rising slightly it had not reached normal before discharge. This chart was similar in some respects to those of cases of unresolved pneumonia/

pneumonia who developed empyema and were treated by aspiration, especially in the subnormal temperature following drainage.

C O N C L U S I O N S.

The conslusions drawn from this study of temperature in diseases of the respiratory system are as follows:-

1. Subnormal temperature may follow pyrexia in any of the acute diseases, namely, in lobar pneumonia, bronchopneumonia, influenza, pleurisy and empyema. This fall is an integral part of the temperature reaction to the infection producing the disease, and occurs at the stage when the infection has been overcome, and while the heat regulating mechanism is still disordered.

2. A persistent and very swinging subnormal temperature was observed in some cases of chronic tuberculosis and in bronchiectasis, and it is suggested that such a temperature may be of assistance in diagnosis in difficult cases.

3./

3. A subnormal temperature is not characteristic of bronchitis, acute or chronic, unless some other factor is present. Nor is it characteristic of tumours of the lung or mediastinum, nor of the rarer diseases, such as streptothrix, anthracosis, silicosis, infarct, or pulmonary thrombosis.

DISEASES OF THE CIRCULATORY SYSTEM.

There were 116 patients admitted suffering from diseases of the heart and blood vessels, 46 in the subnormal group and 70 in the control group.

D E A T H S.

Twenty-one patients died who were admitted for treatment of cardio-vascular disease, 9 in the subnormal group, 9 in the control group, and 3 died on admission before their temperatures were taken. Two were cases of heart failure and collapse, and one was a ruptured aortic aneurysm. In all probability their temperatures were very low, but without confirmation they cannot be included in either group.

The causes of death in the control group were as follows:-

Coronary Thrombosis - 3 cases.
Hyperpiesis - 2 cases.
Myocardial disease - 2 cases.
Aortic valvular disease - 1 case.
Fatty degeneration - 1 case.

In the subnormal group they were as follows:-

Auricular/

Auricular Fibrillation - 3 cases.
Myocardial disease - 2 cases.
Aortic stenosis - 1 case.
Arteriosclerosis and Hyperpiesis - 2 cases.
Infective Endocarditis with Cerebral Haemorrhage - 1 case.

The last-mentioned, (No. 6747) does not really belong to the group. He was admitted 3 months after an attack of rheumatic fever with signs of valvular involvement and a high swinging temperature, which continued for 3 weeks. One day he complained of sudden headache, and rapidly became unconscious; the temperature fell from 100·8 to 96, and 12 hours later he died, with a temperature of 97. At the post-mortem a large recent haemorrhage was found in the temporal and occipital lobes, as well as ulcerative endocarditis of the mitral and aortic valves. As far as the cardiac disease was concerned the temperature was febrile throughout, and only the accidental intracranial complication led to the terminal fall to subnormal.

Of the 3 fatal cases of auricular fibrillation, No. 7397 was admitted with a temperature of 97, cyanosed, oedematous, distressed and delirious. The next two recorded temperatures were 96, and the patient died 24 hours after admission. No. 8258 gave/

gave a history of increasing cardiac disability for one year. He was in considerable distress on admission, and went steadily downhill and died in 4 weeks. The temperature on admission was 98·6, and fell steadily lower and lower, until in the 3rd. and 4th. weeks it was continuously 96. No. 8273, whose chart is reproduced, was an old case of rheumatic pericarditis and valvular disease with a superadded influenzal myocarditis. On admission he was oedematous and in great distress, and the temperature was 95, swinging up next day to 97·8 when his cardiac state was worse. He rallied on massive doses of digitalis, the temperature came down to 95 again and for three days he seemed better. The temperature then began to rise by a series of swings, first between 95 and 97, then between 96 and 97·4, the pulse-rate was increased, and he became mentally confused. On the 9th. morning the temperature rose suddenly to 99·4 from 96 on the previous evening, and the patient died an hour later. If the course of the temperature had been two degrees higher, the chart would be one of a normal temperature with a terminal pyrexia, and the clinical appearances were quite in accordance with fever, for during the improvement/

improvement the temperature was low, and the rising temperature was associated with delirium and quickened pulse-rate.

Nos. 6753 and 6869 were cases of hyperpiesis and arterio-sclerosis. The former was admitted with signs of heart failure and a blood pressure of 202/146. For three weeks he ran a swinging febrile temperature, coming down to a regular normal course in the 4th. week. During this period he was very ill, oedematous and distressed, and did not rally with the fall in temperature. In the 8th. week he had convulsions, but improved again. In the 11th. and 12th. weeks the temperature fell lower, till it became continuously 96, but in the 13th. week it rose to between 97 and 98, and he died a day or two later of a terminal haemoptysis with a temperature of 97. The second case was very similar but with a shorter course. During the first week the temperature was continuously 98; in the second it ran at 97; and in the third it was continuously 96, with a rise to between 97 and 98 in the last three days.

Nos. 7610 and 7706 died of myocardial disease/

disease. The former was picked up unconscious in the street with signs of cardiac failure, and with a temperature of 96. Next day he was conscious, and the temperature rose to 98, and continued at a normal level for 7 days. Towards the end of the week he became mentally confused and restless. On the 8th. day he collapsed and the temperature fell to 96. Next morning he died with a temperature of 96·6. At the post-mortem a recent infarct of the myocardium was found. The second was admitted with dyspnoea, oedema, and Cheyne-Stokes respiration, and a temperature of 96·6. For 4 days it remained at 96, but after venesection on the 4th. day the heart was somewhat relieved and the temperature rose to normal. On the 8th. day he had a sudden attack of dyspnoea and died in a few minutes. The last recorded temperature was 98, but had not been taken for some hours before the terminal attack. There was no post-mortem.

No. 7847 was admitted in extremis. He was an old case of aortic stenosis with sudden onset of heart failure, and died three days after admission. The temperature was very irregular, usually/

usually subnormal, but varying between 96 and 99·2, and just before death on the 4th. morning it was 96·6.

With the exception of the case who died of cerebral haemorrhage, all died of heart failure supervening on previous organic disease. Low temperatures were especially observed in collapse, and towards the end of life, though there was in most cases a terminal rise to normal or even slight pyrexia.

The proportion of deaths in the subnormal group was higher than in the control group - 9 out of 46 as compared with 9 out of 70 - and much higher than in the subnormals of the respiratory diseases, among whom the death-rate was 3 out of 59. It is fair to conclude that a low temperature in cardio-vascular disease is more serious than a normal one, and much graver than in respiratory diseases.

MYOCARDIAL DISEASE.

There were 18 cases of myocardial disease in the control group, two of whom died, one was delirious and was transferred to another ward and two/

two were slightly febrile. In the remaining 13 cases the temperature was normal.

In the subnormal group there were 13 cases of myocardial disease, two of whom died as already described. Two others were admitted in a state of collapse with temperatures of 95 and 96, rising subsequently to normal; and two post-influenzal cases were admitted with temperatures of 96, which rose to normal in a few days. Another influenzal case was febrile for 5 days and then became normal. The remaining 6 were admitted with normal temperatures, and continued at normal levels while lying in bed. But all 11 showed falls to subnormal on first getting up. In 3 cases there were only occasional falls to 95 or 96, either morning or evening, but in 8 the subnormal period was prolonged. In 4 cases there was an immediate fall lasting for 4 or 5 days and followed by a gradual rise to normal; but in 4 others there was a more gradual fall spread over several days, and with no later rise to normal. The chart of No. 7139 is reproduced as an example of the last type. The appearances suggest that with increasing effort the temperature fell lower and lower, and failed to rally/

rally to normal. Taken in conjunction with the high deathrate in the subnormal group, this is probably of importance in prognosis, and the outlook is more grave than in cases in which the normal temperature was re-established.

CHRONIC MITRAL AND AORTIC VALVULAR DISEASE.

In the control group there were 7 cases of mitral and 4 of aortic valvular disease, of whom 2 were febrile and one died. The remaining 8 had normal temperatures throughout.

In the subnormal group there were 6 cases of mitral and 5 of aortic valvular disease, one of whom died as described above.

One case of mitral stenosis ran a peculiar subnormal temperature. He gave a history of 7 years of cardiac trouble, and had been 4 times in the ward already. On admission for the 5th. time the heart was much enlarged, and he was oedematous and dyspnoeic, but improved after two weeks' rest in bed. For the first 10 days the temperature was an irregular subnormal, varying between 95 and 97, but after this it became hectic in type sometimes swinging from 94 to 98 in 12 hours.

This/

This was the only chart of the kind in the group of circulatory diseases, among whom hectic low temperatures were not characteristic as they were in some respiratory diseases; and it makes one wonder whether some other undiagnosed factor was not present.

Eight other cases were admitted with subnormal temperatures, while only one was admitted with a normal one, and his became subnormal on the second day; so that all 9 ran a subnormal temperature during the first few days in the ward, when their symptoms were at their worst. Later one had slight pyrexia, and then settled to regular normal until discharge. 3 were subnormal throughout their stay in hospital, and 5 had a rise to normal while lying in bed and while improvement was in progress, and two of these fell again to subnormal on getting up. In one case of aortic stenosis whom I had the opportunity of watching daily, the temperature did not reach 97 for 3 weeks, but was continuously between 95·6 and 96·6. In the 4th. week it touched 97 for a few days, and fell again to 96; but in the 5th. week it ran between 97 and 98 with several falls to 96, two of which definitely followed slight setbacks.

Cases/

Cases of acute rheumatic endocarditis are included with the records of rheumatic fever, as the temperature course is dominated by the infective process. There was one case of bacterial endocarditis in the control group, who was febrile throughout, and was transferred to a poor-law hospital; and No. 6747, who died of cerebral haemorrhage also had an infective endocarditis, and ran a febrile course.

ARTERIOSCLEROSIS AND HYPERPIESIS.

In the control group there were 11 cases of arteriosclerosis and hyperpiesis, of whom two died and two were febrile. The other 7 were normal throughout.

Among the subnormals there were also 11 cases of whom two died as previously described. Of the remaining 9, 2 were admitted with normal temperatures, and 7 with subnormal. The 2 former had normal temperatures while lying in bed, but on getting up they became subnormal for several days. Four who were admitted with subnormal temperatures became normal while lying in bed and remained so after getting up; the other 3 also became normal in/

in bed, but fell again to subnormal after getting up, and only one had returned to normal before discharge.

In this subdivision nearly every case was suffering from complicating conditions, such as chronic nephritis, heart failure, or nerve lesions, though arterial disease was considered to be the primary factor. They all show, however, a definite similarity in the tendency to low temperature on admission at the height of symptoms, a rise to normal during rest in bed, and a frequent relapse to subnormal on getting up.

AURICULAR FIBRILLATION.

There were 8 cases of auricular fibrillation in the control group, all of whom recovered, and 4 in the subnormal group of whom 3 died - a significant proportion. The fatal cases have already been referred to. The chart of No. 7254 is reproduced, and is a striking example of a very persistent and very low temperature, and probably with a grave prognostic significance. It also shows that collapse may be associated with the relatively high temperature of 98·2, even with an uncountable/

uncountable pulse. On partial improvement the temperature fell to subnormal, and except on three isolated occasions did not rise to 97 during a period of 5 weeks.

OTHER CONDITIONS.

Two patients were admitted for fainting fits. One of them was brought in having fainted outside, with a temperature of 95·6. Next day it was normal and remained so until discharge a few days later. The second was a child of 12, who had fainted several times when threatened with punishment, and was suspected of malingering. This suspicion was supported by one faint which was observed in the ward, in which his colour was good and the pulse-rate was not altered. The temperature was normal throughout, except for a fall to 96 for two consecutive days soon after admission, and there was no fall on the day of the so-called faint.

One case of congenital heart disease with slight symptoms was admitted for three weeks, and ran a normal temperature with one fall to 96 on/

on the 8th. morning for no apparent cause.

One case was admitted with attacks of angina pectoris at frequent intervals for three years. The heart was enlarged and the arteries thickened. He had a very low temperature throughout his stay in hospital, falling as low as 94 after a dose of salts, and usually ranging between 95 and 97. There was no very clear relationship between the falls and the anginal attacks, except that in the second week for five nights running he required morphia, and during these 5 days the temperature hardly rose above 95.

One case of intermittent claudication (No.7267) whose chart is reproduced, also ran a persistently subnormal temperature. For one month he had had cramping pains in the calves on walking, and for a fortnight the right hand had been numb, white and powerless. The arteries were thickened and the blood-pressure was 220/140. He was relieved after a few days' rest in bed and on iodides, and the blood-pressure was lower. While in bed he had a temperature between 96 and 97 rising a little, but on getting up it fell to between 95 and 97, and was more swinging in/

in type. If this temperature had been taken in the ordinary method, it would probably have been charted as a continuous row of dots along the 97 line.

One old-standing case of phlebitis was admitted for a few days for examination of swelling of the affected leg. His temperature was normal except for a fall to 95 on the morning after first getting up, after which it settled to normal.

The outstanding features of low temperatures in cardio-vascular diseases were the tendency to fall on exertion and to rise with rest. Cases were admitted, either in a state of collapse or not, with subnormal temperatures, which often returned to normal while the patient was confined to bed, and fell again on getting up. This was true of all organic diseases of the heart and blood vessels, especially if heart failure was pronounced. In cases with slight symptoms there was an occasional fall on first getting up.

C O N C L U S I O N S.

CONCLUSIONS.

1. A subnormal temperature in chronic disease of the heart and blood-vessels is unfavourable, as the death-rate is higher than in cases with a normal temperature. The temperature chart may be of assistance in making a prognosis as to life and future efficiency.
2. A low temperature is frequently raised to normal by rest in bed, and the state of the temperature might well be taken into consideration in deciding when a patient may safely get up. Cases who fall to subnormal on getting up might benefit by a further period of rest.
3. The temperature seems to be more sensitive than the pulse in recording the adverse effects of effort in cases of cardio-vascular disease. In cases in which falls of temperature were marked, there was no definite relationship with the pulse-rate.

DISEASES OF THE NERVOUS SYSTEM.

447 patients were admitted for disease affecting the nervous system, both organic and functional. Of these 295 were in the control group, and 152 in the subnormal group.

D E A T H S.

In the control group there were 15 deaths, 4 from meningitis, 3 from ruptured cerebral aneurysm, 2 from cerebral haemorrhage, 3 from disseminated sclerosis, 1 from acute myelitis 1 from encephalitis, and 1 from tabes with an ascending urinary infection. Only 3 of these were non-febrile, the cases of cerebral haemorrhage and that of acute myelitis.

In the subnormal group there were 11 deaths, 2 from meningitis, 3 from cerebral haemorrhage, 1 from disseminated sclerosis, 2 from intracranial tumour, 1 from tabes with an ascending urinary infection, 1 from general paralysis, and 1 from subacute combined degeneration of the cord. Only one of these had a subnormal temperature throughout his illness, and the other 10 were febrile/

febrile at some time. 7 died during pyrexia with temperatures from 99 to 106; two died with normal temperatures, and two had a terminal fall to subnormal.

The two fatal cases of meningitis were dissimilar. No. 7832 was a child of 7, who had developed signs of tuberculous meningitis a fortnight earlier. On admission he was delirious with nuchal rigidity and Kernig's sign, and the cerebro-spinal fluid was under pressure but clear. For the first 4 days the temperature was irregularly subnormal, ranging between 96 and 98; it then rose rapidly to a high pyrexia, and he died on the 7th. day with a temperature of 105·4. At the post-mortem tuberculous nodules were found at the base of the brain. No. 7047 was a boy of 13, who was in the ward for over 4 months with a basal meningitis, ending with internal hydrocephalus as was corroborated at the post-mortem. For the first month there was high pyrexia, followed by two weeks of irregular subnormal temperature between 96 and 98. This was succeeded by an interval of normal temperature, and then again by high fever. At the end of 3 months there was a temporary improvement, and the temperature was normal for some weeks, falling to an irregular/

irregular subnormal as the condition relapsed. In the 19th. week he had convulsions, and went rapidly downhill; the temperature fell to 95 on the day the convulsions began, and then fell steadily to 93 before death 4 days later.

In the fatal case of disseminated sclerosis there was also a terminal fall. In this case, No. 6751, there was a short history of only 6 months since the onset of weakness and incoordination, and double vision for a shorter time. For the first 3 weeks the temperature was normal, then he had a loss of bladder control and developed an acute urinary infection. There was high fever for two weeks, falling a little in the 6th. week and becoming subnormal in the 7th. During the last 4 days it hardly rose above 96, and he died with a temperature of 95·2. The 3 cases in the control group all died during pyrexia, two with urinary infections, and one of a perforated duodenal ulcer.

The 3 cases of cerebral haemorrhage all died during pyrexia. No. 6645 was admitted some hours after the haemorrhage with a normal temperature which rose next day to mild fever. On the 6th. day there was a second haemorrhage, during which there was a sudden fall from 98·4 to 95, followed by/

by a rise to 100 two days later, at which point he died. The case was complicated by respiratory signs which developed into hypostatic pneumonia on the day before death, but the chart is reproduced to show the fall of temperature during haemorrhage and the rise afterwards. The rise is here shown twice over, though the second one may have been aggravated by the onset of pneumonia. No. 6816 was admitted with a temperature of 96 two hours after the haemorrhage, and died 6 days later without regaining consciousness. There were pneumonic signs in the last 2 days. The temperature rose after admission, and he was febrile until death. No. 7357 was admitted after the second haemorrhage in 4 years. The temperature was normal for 2 days and then became a very irregular subnormal one, varying between 95 and 98·4 for a fortnight. On the 15th. evening he had a rigor with a rise to 102, and he died next morning with a temperature of 106. There were no signs of any infection and a post-mortem was refused so the cause of the high temperature was never discovered.

Of the two fatal cases of cerebral tumour, No. 7750 had had symptoms for only 12 weeks He was treated with deep X-ray therapy, but went quickly downhill, becoming deliricus, noisy and then comatose. At the post-mortem multiple myelomata/

myelomata of the skull were found with growths in the long bones, vertebrae and abdominal viscera. His temperature was normal in the first week, falling to subnormal in the second, and running lower in the third being between 95 and 96. In the 4th. week there was a sharp rise to 102.4 and he died next day with a temperature of 102. No. 7810 had had symptoms for 2½ years and was getting worse A tumour of the 8th. nerve was diagnosed and was removed by operation, but the patient died 12 hours later. His temperature was a regular subnormal one, being from 96 to 97 and at death the temperature was 97. In both cases the temperature fell to subnormal as the disease advanced, so it may be taken as a sign of grave prognosis.

No. 7213 was an old case of pernicious anaemia who had kept well for some years, but had developed signs of subacute combined degeneration of the cord 3 months before admission. He was admitted with retention of urine and then incontinence and acute cystitis developed. The temperature was normal for the first three weeks, but with the onset of cystitis he had a high swinging temperature with several falls to 96 and even to 95.4. The same type of pyrexia alternating with low temperature occurred in/

in the case of No. 8576, who had had tabes for 1½ years, and was admitted with a pyelo-nephrosis of which he died. His temperature swung from 95·4 to 101 or 102. On the day before death the temperature remained between 95 and 96, and next morning it was 96, but the last recorded figure on the four-hourly chart was 99. In both of these cases the temperature was influenced by the acute infection and not by the nervous disease, but even so they are unusual. A low temperature alternating with high pyrexia was observed in very few other cases. The subnormal temperature of course increased the degree of the daily variation and must have added to the strain on the heart associated with a big variation of temperature.

No. 7737 was a case of general paralysis who had a normal temperature for two weeks, except for two falls to 96, both after lumbar puncture. One morning he woke with a left-sided hemiplegia, and thereafter ran a subnormal temperature between 95·4 and 98·4. As he improved the temperature rose a little. Malarial treatment was given, as a result of which he had a rigor and a rise to 102. Next day he developed bronchopneumonia and died in a couple of days with a temperature of 102.

Probably/

Probably the low temperature here was due rather to the cerebral thrombosis than to the general paralysis.

Most of these cases show a marked instability of temperature with a tendency to sharp rises and corresponding falls. Only one of them, the case of tumour of the 8th. nerve, was non-febrile, and ran a regular temperature. In 7 there was a marked terminal pyrexia, and in two an equally marked terminal fall to subnormal.

M E N I N G I T I S.

There were altogether 9 cases of meningitis, 6 among the controls and 3 among the subnormals. In the control group 2 tuberculous and 2 pneumococcal cases died; one meningococcal case was sent to the Fever Hospital, and one developed a cerebral abscess and was transferred to a surgical ward. All were febrile. There were also 7 cases of post-meningitic adhesions who were non-febrile.

The subnormal group comprised the two fatal cases already referred to. In addition No. 7508 was admitted on the 4th. day of acute illness with a temperature of 104. The C.S.F. was turbid, but/

but no organisms were found, and on the 4th. day after repeated lumbar puncture improvement set in. The temperature became normal in a fortnight, and the patient was allowed up on the 15th. day. For the next week the temperature was subnormal, between 96 and 97, rising in the 4th. week to normal.

Only in the cases with internal hydrocephalus a subnormal temperature seemed to be a feature of the disease, though it was also present in the early stages of one case of tuberculous meningitis. In the last case it was evidently an accidental fall after getting up, though rather prolonged.

INTRA-CRANIAL VASCULAR DISEASES.

54 cases are included under this heading, 37 in the control group and 17 in the subnormal group.

The control group comprises five cases of cerebro-vascular syphilis, 3 of cerebral haemorrhage, 16 of cerebral thrombosis, 6 of cerebral arterio-sclerosis, 2 of congenital cerebral aneurysm and 5 of subarachnoid haemorrhage. The last 7 were all febrile and 5 died in high pyrexia. 3 cases of/

of cerebral haemorrhage and 3 of thrombosis were febrile and the rest were normal.

In the subnormal group there were 22 cases of cerebro-vascular syphilis, 3 of cerebral haemorrhage, and 12 of thrombosis.

The 3 cases of cerebral haemorrhage all died as previously described. In two of them there was a fall after the occurrence of haemorrhage followed by a rise to pyrexia, very similar to the charts in cases of thrombosis. It seems probable that in some of the controls this initial fall was missed through delay in admitting the cases who may have come to hospital only after the temperature had begun to rise.

5 cases of thrombosis were admitted within 3 or 4 hours of the shock, and all had very low temperatures. Two of the charts, Nos. 6515 and 7280 are included to show the extent of this initial fall; in one case it was 93·2 and in the other 94. In the other 3 it was less extreme, the temperature being 96 on admission, rising rapidly to about 99 and falling again to subnormal. 4 others were admitted with normal temperatures, and one with slight pyrexia of 99·4, and a few days later all showed a fall to subnormal and a subsequent/

subsequent very irregular low temperature. They may have been admitted too late to show the first fall. One other was admitted 3 days after the shock when he was already better; his temperature was normal for a fortnight, with a fall to subnormal for a week after getting up, and a return afterwards to normal. No. 8505 I observed in the ward. He was admitted with rheumatic pains in the neck, knees and ankles, and was found to have a high blood-pressure and thickened arteries. For over two weeks the temperature was normal, and regularly between 97 and 98. One morning in the 3rd. week there was a fall to 96 and in the afternoon he had a transient agraphia with no other symptoms, and which passed off in a few hours. The temperature again became regularly normal, but a week later there was a fall to 96 again in the morning. That afternoon his speech became thick and his right hand was weak. That evening the temperature was 98, and 98·4 for several days, then it became an irregular subnormal one, usually between 96 and 98 with falls to 95·4. There was a little improvement in speech and paresis before discharge. This chart was in all respects similar to those of cases of greater severity, and shows the previously normal temperature/

temperature, the fall to subnormal, actually preceding the onset of symptoms, the subsequent rise and then the protracted irregular subnormal course.

Of the two syphilitic cases, No. 6524 was admitted with aphasia and spasticity of the legs; the Wassermann was strongly positive and he improved on mercury and iodides. His temperature was normal on admission, but on the 3rd. day became a very irregular subnormal varying between 94 and 98·4. There was also some myocardial weakness which may have been a contributary factor, but otherwise the chart was similar to several of those of thrombosis. No. 6681 complained of dizzy turns, and the Wassermann being positive, he was transferred to the venereal ward after a few days. His temperature was normal throughout except for a fall to 96 after lumbar puncture. Evidently syphilis alone does not produce subnormal temperatures.

H E M I P L E G I A./

H E M I P L E G I A.

There were 4 cases of old cerebral involvement resulting in hemiplegia, two in each group. No. 6685 was a case of Little's disease aged 7 years, who walked fairly well with a spastic gait. His temperature was normal with two isolated falls to 95 after getting up. No. 7399 was also a case of Little's disease, and at 26 was completely helpless. His temperature was also normal with occasional falls to 96.

CEREBRAL TUMOUR.

There were in all 30 cases of intracranial tumour, 21 in the control group and 9 in the subnormal group. Of the former, one was febrile, 7 were transferred for operation, and 4 were post-operative cases. With the one exception their temperatures were normal.

In the subnormal group, 3 ran normal temperatures with occasional falls to subnormal; and one had a more prolonged fall to subnormal in the 4th. week. One post-operative case was febrile for several days after operation and then became normal/

normal with occasional accidental falls. In only 4 a subnormal temperature was a definite feature, and in them it was significant. One was the case of tumour of the 8th. nerve who died after operation as already described and whose temperature was subnormal throughout. One was the fatal case of myelomata of the skull. No. 6593 was definitely worse after operation. A parietal decompression was done for a large tumour in the left thalamic region, after which the patient developed aphasia and right-sided hemiplegia with double papilloedema and later optic atrophy. The temperature on admission was normal, but began to fall at the end of the first week, and continued falling lower and lower till it touched 94 in the 4th. week. He was then discharged unimproved. No. 7514 had had symptoms, chiefly headache for 5 months. On admission the temperature was 95·4 and ran a very irregular course for 9 days, between 96 and 100. On the 10th. day he became comatose, but was roused with glucose intravenously and large doses of magnesium sulphate. The temperature that day was between 96·4 and 99·4 and then became an irregular subnormal, between 96 and 98, until he was transferred on the 17th. day for decompression.

Evidently/

Evidently subnormal temperature only occurs in a small percentage of cases of cerebral tumour. In this series it only occurred in cases who were going downhill and seems to indicate a bad prognosis.

E P I L E P S Y.

There were altogether 32 cases of epilepsy of all varieties, 22 in the control group and 10 in the subnormal group, 1 of petit mal, 1 of Jacksonian epilepsy, and 8 of major epilepsy.

The case of Jacksonian epilepsy and two others had normal temperatures with occasional falls to subnormal. The chart of the former is reproduced to illustrate a fall after wakening unduly early, and a less marked fall after an aperient. No. 7157 had had fits for two years at long intervals, No. 7910 had had frequent fits for 9 years, and was mentally defective and had an infected bromide rash. There was no improvement on luminal and he was recommended for institutional treatment. In none of these was the temperature really subnormal.

In/

In the other 7 cases there was a period of prolonged low temperature, and in only two was there a rise to normal before discharge. In two cases there had been fits for less than two years, both with marked mental changes; and 4 others had had fits for many years with marked mental impairment. One other, the case of petit mal, was an old man who had had minor attacks for a year; he was confused and at times completely disorientated. All of these cases ran a low irregular temperature which had no relation to the occurrence or cessation of fits. Thus it appears that a subnormal temperature may accompany the graver forms of epilepsy with mental and physical deterioration, but without being directly effected by the fits.

E N C E P H A L I T I S./

E N C E P H A L I T I S.

There were 33 cases of encephalitis, 22 in the control group and 11 in the subnormal group.

Among the latter 7 were admitted with typical Parkinsonism, and all ran normal temperatures with occasional falls to subnormal. Two were acute cases who were drowsy and disorientated on admission. No. 6544 was febrile for 13 days, then the temperature fell to 96 as if by crisis and was normal for a few days. Later it became a swinging subnormal from 95 to 97 until discharge 2 weeks later. No. 7565 was admitted on the 4th. day of illness with a temperature of 95, and it ran between 95 and 96 for 3 days. There was then pyrexia for ten days after which the temperature became normal.

The two others were recent cases of chronic encephalitis. One came in with a history of 8 months' increasing dullness and slowness of movement; his temperature was normal while lying in bed, but fell to subnormal after getting up. The second complained that his eyes had been turning up for 4 months, but had no other signs of Parkinsonism. His temperature was regularly between 96 and 97.

Evidently/

Evidently a subnormal temperature may be associated with the acute stage of the disease and also with recent chronic encephalitis, but is not a feature of post-encephalitic Parkinsonism.

GENERAL PARALYSIS OF THE INSANE.

There were 6 cases of general paralysis 3 in each group. One of the subnormals died of bronchopneumonia as already described, and the other two cases were only subnormal during malarial treatment. No. 7669 had 11 rigors, and the temperature swung from 96 to 103 or 104. After administration of quinine the temperature was between 96 and 97 for two days and 95 on the 3rd. The quinine was then stopped and the temperature became an irregular subnormal one until discharge 10 days later. In the case of No. 7780 the malarial treatment was unsuccessful as he had only two rises of temperature without rigors. After the second rise he ran a very irregular subnormal temperature for a fortnight, after which he was transferred to the venereal ward.

DISSEMINATED SCLEROSIS./

DISSEMINATED SCLEROSIS.

There were 26 cases of disseminated sclerosis among the controls, and 14 among the subnormals, making 40 altogether. Of the controls 2 died with complications during pyrexia, and two others were febrile, while the remaining 22 had regular normal temperatures.

Of the subnormals, one died of urinary complications, with a marked terminal fall to subnormal as previously described. Another had a very low temperature for 3 days after admission and then became normal until some accidental falls occurred after getting up. 6 others had normal temperatures with occasional falls to subnormal.

In 6 other cases the fall was more prolonged. 2 were admitted with subnormal temperatures which rose to normal after a few days' rest in bed, and fell to subnormal on getting up. The other 4 were normal for some time after admission and then ran an irregular subnormal course for days or weeks. The most striking example was No. 7172 who had been in hospital twice before. He had been unable to walk for 4 months and was going downhill so was transferred to a home for incurables/

incurables after 3 months in the ward, during which time he was completely bed-ridden. For 6 weeks his temperature was regularly between 97 and 98, but from the 7th. to the 9th. week it ran between 96 and 97, and from the 10th. to the 13th. week it was still lower, frequently touching 95. During this time he was becoming more and more helpless. No. 7242 had a three years' history of increasing spasticity, and had a normal temperature for 12 days after admission, after which it became an irregular subnormal one frequently falling to 95. No. 7286 was also an old case admitted during a relapse. The temperature was normal for 3 weeks with some isolated falls, but in the 4th. week it began to run at a subnormal level and continued so until he was discharged in the 5th. week unimproved.

The charts suggest that during the progressive stages or during relapse there is a tendency to a subnormal temperature; which increases with increasing physical disability. During remissions the temperature seems to be regularly normal except for occasional falls.

BULBAR PALSY./

BULBAR PALSY.

One case of bulbar palsy occurred in the control group and 3 in the subnormal group. All of the latter had very low temperatures as is illustrated in the chart of No. 7324. He had been troubled for several months with general weakness, and for one month with difficulty in speech, swallowing and smoking. After admission the temperature began to fall and reached 94; in the second week it was continuously subnormal, mostly between 95 and 96, while in the 3rd. week it was between 96 and 97. The swallowing improved so that he was taking a fair amount of food, but there was no change in the speech. No. 7301 had a similar history, but the speech defect was more marked and did not improve, though the swallowing was easier before discharge. His temperature was persistently subnormal, varying between 94·8 and 97, rising occasionally to 98 in the 5th. week. No. 7567 was more advanced and swallowing was so difficult that for 3 days he was given only rectal feeding. During this time the temperature was subnormal, between 95 and 97. After this the stomach tube was/

was passed thrice a day, and he was given a full diet by this method, and he learnt to pass the tube himself before discharge. He gained two pounds in a week, and the temperature rose to between 97 and 98.

In all three cases it looks as if semi-starvation had a great deal to do with the subnormal temperature as all, especially the last showed a rise towards normal with increased intake of food, and the last case also shows fall while on rectal feeding.

POST-CONCUSSIONAL SYNDROME.

17 cases were admitted for the after effects of head injury, of these 10 in the control group had normal temperatures, and 7 were in the subnormal group. 5 of these had normal temperatures with occasional falls, and were not truly subnormal. One other was brought in unconscious having fallen downstairs; a fracture of the skull was shown by X-ray. His temperature was subnormal for about a week and then became regularly normal. No. 7351, whose chart is reproduced, had a subnormal temperature for nearly three weeks. He had had/

had an injury to his head and shoulders 7 years before, and ever since he had been troubled with headaches and giddiness. He was depressed and anxious about himself, and was sleeping badly. Weir-Mitchell treatment was started on the 5th. day, and he was kept in isolation for a fortnight by which time the headaches had completely disappeared and he felt a "new man". For the first 10 days the temperature was an irregular subnormal, often as low as 94; after this it began rising to 95 and higher and touched 97 at the end of the second week. It was about 96 when the screens were removed, and on discharge on the 21st. day the temperature was 97. This type of irregular low temperature was commonly seen in cases of neurosis, and probably was due to the mental depression rather than to the original injury. It does not therefore appear that subnormal temperature is a characteristic of post-concussional states.

DEGENERATIVE CONDITIONS OF THE BRAIN./

DEGENERATIVE CONDITIONS OF THE BRAIN.

There was one case of cerebellar atrophy in the control group, 2 in the subnormal group and one case of cerebral softening. No. 6955 had a history of increasing giddiness with attacks of unconsciousness; his temperature was an irregular one being subnormal for two weeks, then normal for two weeks, then again subnormal for a week until discharge. Another case had a very similar history and chart. No. 7354 was an elderly man, who had failed mentally and physically for some months, but with no very definite signs of disease. He also had a persistently low temperature for a month, varying between 94 and 97·4. In all these cases a continuously low temperature seemed to be a feature of the degenerative processes.

CASES WITH MUSCULAR WASTING./

CASES WITH MUSCULAR WASTING.

It seems reasonable to expect subnormal temperatures in diseases with muscular wasting since the muscles are the principle source of heat production in the body.

Under this heading there are included in the control group 1 case of infantile paralysis, 2 of progressive muscular atrophy, 1 of myasthenia gravis, and 2 of amyotrophic lateral sclerosis. In the subnormal group there were 3 cases of infantile paralysis, 3 of progressive muscular atrophy, 1 of myaesthenia gravis, and 2 of amyotrophic lateral sclerosis, so that the two groups were very similar.

The 3 cases of infantile paralysis were all old cases, admitted months after the attack, and none were incapacitated. All had normal temperatures with occasional falls to subnormal, while one only had a fall on 3 successive days after getting up.

The 6 other cases all ran very low temperatures throughout their time in hospital, with no tendency to a rise to normal; they were mostly irregular in type, ranging between 94 and 98.

Their/

Their charts do therefore support the suggestion that muscular wasting should be a cause of subnormal temperature.

SUBACUTE COMBINED DEGENERATION OF THE CORD.

There were altogether 8 cases of subacute combined degeneration of the cord, 4 in each of the groups.

One of the subnormal group died of a urinary infection, as previously described, and in his case the subnormal temperature was a part of the complication rather than of the primary disease. One other ran a normal temperature with occasional falls to subnormal; but Nos. 6520 and 7136 had very irregular subnormal temperatures, especially the former who was finally transferred to a poor law hospital unimproved. The second was febrile for part of the time, but before and after pyrexia the temperature was irregularly subnormal.

PERIPHERAL NEURITIS.

In the control group there were 30 cases of peripheral neuritis including 10 cases of sciatica, 5 of trigeminal neuralgia, and 1 of Bell's palsy. In the subnormal group there were 6 cases of peripheral neuritis and 3 of sciatica.

In the 3 cases of sciatica the temperature was normal for the first week or ten days and then ran at a subnormal level, usually between 96 and 97, with lower falls from time to time. After getting up all were continuously a little lower, with more frequent evening falls. In one case whom I observed, the falls seemed to follow increase of pain; a morning fall could be traced to a sleepless night, and an evening one to pain after exercise.

In the 6 other cases of neuritis, 3 had pain, and their temperatures were normal with incidental falls of which a few could be traced to disturbed nights. The other 3 cases were of neuritis affecting the motor nerves, and had difficulty in walking and loss of the tendon reflexes, and all had persistently low temperatures. The chart/

chart of No.6568 is reproduced as an example. This subnormal temperature in peripheral nerve lesions with loss of muscular tone is in accord with the low temperatures found in the diseases with muscular wasting, and also with Professor Starling's statements as to the effects of severing the skeletal muscles from their nerve supply.

T A B E S.

There were 13 cases of tabes in the control group, and 7 in the subnormal group, making 20 in all. In the former group 5 had urinary infections and were febrile, and one of them died with high fever. In the 8 other cases the temperature was normal throughout.

In the subnormal group 3 had normal temperatures with occasional falls to subnormal. One was given malarial treatment, and had 9 rigors during which the temperature rose to 103 or 105, with falls to 96 in between. After the malaria was checked with quinine the temperature settled to a regular normal level. Another had a terminal pyelo-nephrosis, during which the temperature swung from 96 to 105.

The/

The remaining 2 cases had subnormal temperatures for long periods, but in both another factor was present. No. 6654 had had anginal attacks and the X-ray showed a widening of the aortic shadow; his temperature was a swinging subnormal between 94 and 97 and resembled those of chronic myocarditis. No. 7271 was admitted during a gastric crisis, exhausted with vomiting and pain. His temperature was between 95 and 97 for about 10 days and then rose steadily to normal.

Thus it is evident that a subnormal temperature is not an essential feature of tabes, but that falls may be accidental or the result of some complication.

N E U R O S I S./

N E U R O S I S.

91 cases were admitted for treatment of purely functional conditions of various kinds, paralyses, anxiety states, traumatic or gastric neurosis, and other forms of functional disability. 60 were in the control group and 31 in the subnormal group.

A noteworthy fact was the instability of temperature in the great majority of cases. In many there was slight pyrexia, seldom above 99·4 and not to be attributed to heating the axilla with hot water bottles. In others the temperature was within normal limits, but very irregular, with a big daily variation, and in the remainder of cases the temperature was subnormal, usually very irregular, but sometimes persistently low and swinging. The latter type was most frequent in cases of profound mental depression.

In the subnormal group 12 cases had normal temperatures with occasional falls to subnormal. The chart of No. 6635 is reproduced to show an irregular temperature, usually normal with one rise to 99·4 and one fall to 95. He had been run/

run down for 4 months, and recently had had distension after food, nausea and retching; his heart was missing beats and he thought there was something serious the matter with his stomach. An X-ray and a test meal showed a healthy stomach and on being reassured he quickly recovered from his symptoms, and his temperature became more regular as he improved.

In 19 cases the period of subnormal temperature was much longer and the course more irregular. No. 6509 whose chart is reproduced had been slightly injured in a motor accident 5 years before, and had had to pay a large sum in damages, so that he was in difficulties over the support of his family. For 6 months he had been suffering from blurred vision and queer feelings in the head and stomach. He was treated with rest in bed and isolation behind screens for a fortnight, and made a good recovery. At first his temperature was a hectic subnormal, swinging between 95 and 98 in 12 hours, but as his mental state improved the temperature became more settled, though still irregular. No. 6609 was in a state of deep depression unable to walk, with pains in the hips and discomfort/

discomfort in the rectum; there was no improvement during a 5 weeks' stay in hospital. His temperature was an irregular subnormal one, varying between 94 and 98. No. 6613 had had meningitis several years earlier, and a head injury in childhood. Since an unhappy marriage two years before he had been suffering from headaches and depression. On admission his temperature was 101 and for several days varied between 97 and 99·4. In the second week it became subnormal, and ranged between 94 and 96, during which time he was moody, silent and introspective. Later he brightened up and his temperature began to run at a higher level and for some days before discharge it was regularly between 97 and 98. No. 7327 was admitted with tremors of the hands and legs, and nodding of the head which proved to be entirely functional, and he improved with encouragement and exercises. For the first 2 weeks the temperature was between 96 and 98 after which he got up. Then for nearly 4 weeks the temperature was a swinging one between 95 and 97, rising in the 7th. week to a regular subnormal between 96 and 97.

Evidently an anxiety state may have an effect on the production and regulation of body/

body heat as marked as its effect on the efficiency of the body; and just as the patient's mental and physical condition varied "up and down", so the temperature was unstable and variable, falling with depression and tending to rise with an improvement in well-being. Also, just as a functional patient may be excited and emotional rather than depressed, so the temperature may be above normal. The prevailing characteristic of all aspects of his state is instability.

OTHER MENTAL STATES.

Under this heading there are included 2 cases of mental deficiency, 5 of melancholia, 1 of mania, 1 of senile dementia and 1 of nocturnal enuresis.

One case of mental deficiency, 1 of melancholia, 1 of senile dementia and 1 of nocturnal enuresis were in the subnormal group.

No. 7586 was a Mongol aged 7 years, fairly intelligent and with no physical defect. His temperature was normal with one accidental fall.

No. 6682 was a melancholic who was sleepless, unhappy and given to sitting alone weeping./

weeping. During the first 3 days his temperature swung from 95 to 97. It was lowest in the mornings, and at this time he was in the habit of wakening early. On the 3rd. day he was started on a course of bromides thrice a day, and the sleeplessness was soon relieved. There was one more morning fall, and then the temperature began to rise and to be more regular. The last few days it was normal with one fall to 96, but he refused further treatment and went home. The chart is reproduced to illustrate the effects of depression and want of sleep on the temperature.

No. 6620 was an old man whose memory was failing; he was mentally confused and very sleepless. He was in the ward for only three days and his temperature was between 95 and 97 during this time.

No. 6619 was a nervous boy of 14 who had frequency of micturition by day and enuresis at night. He had been severely punished for this and was apprehensive and timid, but became more cheerful with encouragement. His temperature was irregularly subnormal throughout, varying between 95·4 and 98·4, but as his fears were relieved it became more regular between 96 and 97.

M I G R A I N E.

There were two cases of migraine both in the subnormal group, though one had a normal temperature with one isolated fall to 96.

The other, No. 7362 had an irregular subnormal temperature for a month, usually between 96 and 97, but varying between 95 and 98·4.

On only one occasion he had a headache and that day the temperature was 97·4 morning and evening, with a fall to 96 the next morning.

OTHER CONDITIONS.

Several other isolated cases of nervous disease are included here.

One was a case of tobacco amblyopia and chronic alcoholism, but as his temperature was normal with one fall to 96 it was not a true subnormal one.

No. 6572 was a case of spinal pachymeningitis, who was in the ward for three months. For the first 5 weeks the temperature was a swinging subnormal between 96 and 98, then there was a slight pyrexia for three weeks, and afterwards it became/

became a regular subnormal between 96 and 97.

No. 6500 was a case of ataxic paraplegia, whose chart is reproduced as an example of a very low and variable temperature. He had had increasing difficulty in walking for a year; the legs were spastic and markedly ataxic. The Wassermann was negative, and there was no improvement on iodides. His chart also shows a fall after lumbar puncture, after which it was swinging in type and sometimes hectic. If this temperature had been recorded in the ordinary way, it would have been shown as a row of dots along the 97 line with no hint of the extreme irregularity.

C O N C L U S I O N S.

1. In a few intra-cranial diseases a subnormal temperature is a definite feature of the condition. This was chiefly the case in vascular diseases. In both cerebral haemorrhage and cerebral thrombosis there was a sharp fall at the onset of disease, followed by a rise to normal or higher, and again by a period of irregular subnormal temperature.

2./

2. Intra-cranial tumours and increased intra-cranial pressure do not as a rule give rise to low temperatures, though there were exceptions. In the few cases of cerebral tumour with subnormal temperature the disease was advanced and the prognosis was bad.

3. In a few cases of epilepsy with physical and mental deterioration a subnormal temperature was a definite feature, but in the majority, even with mental changes, the temperature was within normal limits.

4. Some cases of nervous disease with muscular wasting had prolonged periods of subnormal temperature; and possibly advanced cases of disseminated sclerosis with extensive paralysis may be included in this group. The essential factor seems to be the deficient heat production in the affected muscles.

5. In starvation states, such as bulbar palsy, a low temperature is evidently due to deficient food supply.

6. In a few non-febrile conditions with pain there/

there were falls of temperature which could be traced to attacks of pain, or to lack of sleep.

7. Neuroses, mental depression and mental deterioration may be accompanied by very low and irregular temperatures which are influenced by the mental state during recovery.

ALIMENTARY SYSTEM.

There were altogether 176 cases of diseases of the alimentary tract, organic and functional; and of these 70 were in the subnormal group and 106 in the control group.

D E A T H S.

Fourteen patients died as a result of disease of the alimentary system, 8 in the control group and 6 in the subnormal group. The control group comprised 4 cases of gastric carcinoma, 2 of ulcer with haematemesis, 1 of retroperitoneal tumour, and 1 of traumatic intestinal haemorrhage. The last case and one case of carcinoma were febrile and the remainder had normal temperatures.

In the subnormal group there were 2 cases of carcinoma of the stomach and 1 of the colon, 2 of gastric ulcer with haematemesis, and one of duodenal ulcer who developed a subphrenic abscess.

Of the cases of malignant disease, No. 7015 had a history of discomfort after meals for 4 months, and pain and jaundice for 10 days. At times the stools had been tarry. He died 10 weeks after admission, and at the post-mortem a growth on the lesser/

lesser curvature without pyloric obstruction was found, and secondary nodules in the liver. His temperature was regularly normal with occasional falls to subnormal, until the 10th. week, when it rose suddenly to 100, and for the last few days of life he was febrile. His temperature showed no tendency to run a subnormal course. No. 8516, on the other hand, had a marked terminal fall and his chart is reproduced. His symptoms dated back only 4 weeks, but on admission he was emaciated and exhausted with constant vomiting, and a large mass was palpable in the epigastrium. Vomiting was so severe that on the 5th. day all food by mouth was stopped, and he was fed entirely per rectum. He died on the 10th. day, and the post-mortem showed a very large tumour almost occluding the pylorus. During the first few days the temperature was slightly febrile, but as soon as the rectal feeding was begun it commenced to fall steadily, until it reached 94°4 before death. This fall during rectal feeding was very constantly observed in cases deprived of nourishment by mouth, and probably in this case it was due to the starvation state rather than to the actual tumour.

The case of No. 8271 was somewhat similar. He gave a history of increasing constipation for 3 months, and pain and jaundice for a shorter time. He had constant severe pain, requiring large doses of morphia, and died a week after admission. At the post-mortem a small growth was found in the colon, with secondary nodules in the liver. His temperature was normal on admission, but fell steadily to 95°8 before death. During the last few days he had taken only a little liquid food, and probably the terminal fall was really the result of semi-starvation and not directly caused by the neoplasm.

No. 6611, was a case of long-standing duodenal ulcer, with partial pyloric stenosis, who had kept well for many months, but had relapsed 4 days before admission. For the first week his temperature was between 98 and 98°4, during which time the pain and vomiting were entirely relieved. In the second week he was well enough for a barium series to be taken, and at this time the temperature was 95 for two days, returning to normal as soon as the X-ray was finished. A few days later he developed a subphrenic abscess of which he died in high pyrexia.

The/

The two fatal cases of gastric ulcer were unlike. No. 7900 was an old man who had had digestive trouble for only 6 weeks, though for 3 days he had been worse, and finally collapsed. On admission he was semi-conscious, with a small irregular pulse and a temperature of 96. He died a few hours later, still with a temperature of 96. At the post-mortem a large gastric ulcer with a recent haemorrhage was found, also an enlarged heart with signs of chronic myocarditis. As this was the only case observed of a low temperature accompanying haemorrhage, it seems more than probable that the subnormal temperature was the result of chronic myocarditis. The second case, No. 8560, was more instructive. He had had ulcer symptoms for 15 years, but had never carried out prescribed treatment properly, and for the last year he had been much worse, with recurrent haemorrhages. An operation had been done, but no ulcer was found, only an acutely inflamed duodenum and appendix. He had another haematemesis soon after the operation, and was given a blood transfusion from his son, and at length was admitted to the medical side, after several more haemorrhages. On admission he was very anaemic/

anaemic, but quite sensible. Next day he vomited a quantity of blood, and the following day he was apparently moribund, white, clammy, and quite unconscious. He was given another transfusion from the same donor, and rallied at once, becoming conscious though confused. For the next two days he seemed to be improving, but on the 5th. evening the temperature rose to 100, and he died on the 6th. morning with a temperature of 104. At the post-mortem a large ulcer was found in the cardiac end of the stomach, with recent haemorrhage. On admission the temperature was 98, and on the day of haematemesis it was 97·4, rising on the day of the transfusion to 98·4. On the 4th. and 5th. days, when he was better, it fell to 96, rising again to high pyrexia before death. His chart is included to show the normal temperature during haemorrhage, even when he was in extremis, with a fall to subnormal after the bleeding was checked. The terminal pyrexia was unexplained.

DISEASES /

DISEASES of the OESOPHAGUS.

There were only 3 cases of disease of the Oesophagus, 2 in the control group, and 1 in the subnormal group. In the control group one was a case of carcinoma, and one of oesophagospasm, and both had continuously normal temperatures. The one subnormal case, No. 7557, was also malignant, and had symptoms for a year. He could swallow only liquids, and his temperature was continuously between 96 and 97 for the first week. Then he developed a hypostatic pneumonia, and had a high temperature until he was transferred to another ward for radium treatment. Probably his low temperature was due to insufficient nourishment, and not directly to the growth.

FUNCTIONAL DISORDERS of the STOMACH.

There were 15 such cases in all, 7 in the control group and 8 in the subnormal group. In the former there were 2 cases of hypochlorhydria, 4 of hyperchlorhydria, and one of dyspepsia, all of whom had regular temperatures. In the subnormal group there was 1 case of hypochlorhydria, 3 of hyperchlorhydria, and 4 of dyspepsia.

The/

The case of hypochlorhydria, No. 6602, was anxious about himself, and there was a large functional element in his symptoms; there was no free acid in the test meal, but the X-ray showed nothing pathological, and he improved with reassurance and dieting. His temperature was subnormal throughout, at first irregular between 95 and 98, but settling to between 96 and 97 as he improved.

Two of the cases of hyperchlorhydria had normal temperatures with one isolated fall each, so that neither was truly subnormal. The third, No. 6519, whose chart is reproduced, was different. He had had gastritis some months earlier, and had never been well since, with constant abdominal pain and discomfort. The free acid was high, but the X-ray showed a normal stomach, and he improved with alkalies and dieting. His temperature was very regularly about 97 for several days, and then became much more irregular but still within normal limits for several more days. In the 3rd. week it became a regular subnormal for a week, running between 95 and 96 with one fall to 94. Before discharge it was again normal. Nothing in the progress notes gives any clue as to the cause of the week's subnormal/

subnormal temperature.

The 4 cases of dyspepsia were all worried and anxious about themselves, fearing that there was something serious the matter, and doubtless the anxiety state was a potent factor in causing subnormal temperatures. No. 6592 had a temperature of 99 on admission, falling by degrees first to normal and then to subnormal in the second week. It became normal again for the last two days before he was discharged cured. No. 6593 ran a temperature of between 96 and 97 for ten days and then became normal. No. 7170 was treated behind screens for a fortnight, and lost all his symptoms; his temperature was subnormal for ten days, and then very gradually rose to normal in the 3rd. week. No. 7563 also had a subnormal temperature for several days, becoming normal as he improved.

In all but the cases of hyperchlorhydria there was a period of low temperature after admission, becoming normal with recovery, and associated with anxiety. It would therefore appear that the mental factor was of importance in influencing the temperature, and that these cases were allied to/

to the neuroses, whose tendency to subnormal temperature has already been discussed. The one case of hyperacidity with a low temperature for several days cannot be accounted for in this way, and is not easily explained.

GASTRIC ULCER.

There were altogether 28 cases of gastric ulcer, 14 in each group. In the control group one case with haematemesis died with a high temperature, another fatal case had a normal temperature, and a third who recovered also had a normal temperature. The remaining 11, who had no haemorrhage, all had normal temperatures.

In the subnormal group there were 7 cases with haematemesis and 7 without bleeding.

Of the 7 who had no haemorrhage, one had a normal temperature with one isolated fall, and another had a normal temperature with a fall to 96 for 3 consecutive days, for no apparent cause. A third had a normal temperature with occasional rises to 99 as well as falls to 96. Thus, of the 18 cases of gastric ulcer without haematemesis, 14 showed no tendency to run subnormal temperatures. The 4 remaining/

remaining cases had persistent subnormal temperatures for some time after admission, usually irregular, but tending to settle either between 96 and 97 or between 97 and 98. All these cases had a history of pain and vomiting, but no worse than in the other cases with normal temperatures, and if the low diet was a factor in causing a low temperature it should apply equally in normal and subnormal cases. Possibly there was a functional element in these 4 cases, and worry had to do with the low temperature.

Of the 7 cases with haemorrhage, 2 died as previously described, one in a state of collapse with a subnormal temperature, the other in high pyrexia. One patient was admitted 2 days after a haematemesis, and 4 others immediately afterwards, and all 4 had further haemorrhage in the ward. The former, No. 7782, had a temperature of 101 on admission, and was febrile for a day or two. Then the temperature became normal for a week, falling to subnormal in the second week, and not returning to normal until the 4th. week; so that in this case there was a long period of low temperature commencing about a fortnight after the cessation of bleeding. The remaining 4, who were admitted during haemorrhage,/

haemorrhage, were all put on rectal feeding for a few days, and then given a very low diet by mouth, gradually increasing to an almost full diet. In every case the temperature kept up to normal or slightly higher as long as bleeding was going on, and fell to subnormal afterwards. The chart of No. 6921 is reproduced as an illustration. He was admitted some hours after a sharp haemorrhage, cold and collapsed, with a temperature of 96°2. During the first two days he vomited blood several times, and on the 3rd. day he passed several tarry stools, and occult blood was present until the 12th. day. His temperature rose to normal by the evening of the first day, and was slightly above normal for 4 days, coming down to between 97 and 98 at the end of the first week. In the second week it was a little lower, and touched 96 twice, just before occult blood disappeared from the stools, and when active haemorrhage was at an end. After this the temperature became regular about 97 until discharge. In the other cases the fall was more prolonged, but was seldom below 96. In one case, the patient complained of feeling chilly one day in the third week, and next morning there was a fall to/

to 94, but there was no sign of bleeding, and the stools were not dark.

It appears that during active haemorrhage the heat producing mechanism of the body is in some way stimulated to keep up the body temperature, and prevent a fall to a dangerously low level. Once the immediate danger is over, the stimulus is no longer necessary, and there may be a subsequent period of low temperature for a longer or shorter time.

DUODENAL ULCER.

There were altogether 43 cases of duodenal ulcer, 23 in the control group and 20 in the subnormal group.

Of the controls, 6 were transferred to surgical wards for operation, and another refused operation, and was discharged unimproved. The remaining 16 were benefited by medical treatment, none had any sign of haemorrhage, and all were nonfebrile.

Of the subnormals, one died of a complicating subphrenic abscess as already described. One was admitted with extreme vomiting; one came in/

in after a severe haematemesis, and 4 others gave a history of recent haemetemesis or melaena. In 13 there was no history of haemorrhage, but the symptoms complained of were pain, especially at night, and vomiting.

The case of extreme vomiting, No. 7356, had had ulcer symptoms for 8 months, and for 4 days had vomited everything he took. On admission he was ill and dehydrated, but there was no haemorrhage, and the temperature was 98 to 98·4 on the first day. He was fed per rectum for 3 days, and the temperature fell gradually to 95 on the 4th. morning, becoming irregularly subnormal between 95 and 97 for several days. Meantime the diet was being increased. In the second week the temperature settled to between 95 and 96, rising in the third week to between 96 and 97, but it had not reached normal before discharge.

No. 7441 was admitted a few hours after a severe haematemesis, weak and pale, with a temperature of 100·2. He was fed rectally for three days, after which blood disappeared from the stools and feeding by mouth was started. For the first few/

few days the temperature was about 99, and then fell slowly for ten days, until it became regularly subnormal, between 96 and 97. There was a still slower rise, reaching normal only in the 4th, week.

Of the 4 cases admitted with recent haemorrhage, two had subnormal temperatures between 95 and 98 throughout, and two had normal temperatures with occasional falls to subnormal.

The remaining 13 cases with no history of haemorrhage showed several interesting points. One case, No. 6655, had a good deal of vomiting, and had a subnormal temperature throughout, often irregular, but usually from 96 to 97. He had one attack of severe pain at night, and next morning the temperature was 94. No. 7697 had unusually severe and frequent pain, and ran a subnormal temperature for a month. In three cases there was a subnormal temperature only during the taking of a barium series; this was also noticed in the case who died with a subphrenic abscess. It suggests that dietary changes involved are upsetting to the patient, or that the fatigue of going to the X-ray department is harmful. In the 8 other cases there were long periods of subnormal temperature, sometimes lasting for 3 or 4 weeks, usually irregular, and/

and sometimes alternating with normal for a day or two. Only one case became normal before discharge.

It appears that subnormal temperature is much commoner and more lasting in duodenal than in gastric ulcer. It is difficult to see why this should be, as clinically there is a great similarity between the two conditions, and treatment is practically the same for both. In duodenal ulcer there is more night pain, and want of sleep might be a factor in some cases, but subnormal temperatures persisted long after symptoms were relieved. The only case in which haemorrhage was observed in the ward had the typical rise during bleeding, with a gradual fall afterwards. The 4 cases who had had haemorrhage some time before admission were too variable for drawing any conclusion.

PYLORIC STENOSIS.

There were 3 cases of pyloric stenosis following on healed ulcer, and only one of these was in the subnormal group. He was admitted with a good deal of vomiting, which was relieved with suitable dieting, and his temperature was subnormal only for the first two days in the ward. Otherwise all/

all three had normal temperatures.

GASTRIC CARCINOMA.

There were 14 cases of malignant disease of the stomach in the control group, and 8 in the subnormal group.

Of the former, 4 died, all with normal temperatures; 4 were transferred to surgical wards, also with normal temperatures, and of the remaining 6, 2 had high temperatures and 4 were normal.

In the subnormal group, 2 died as already described, one with a terminal pyrexia, and one with a terminal fall, evidently as the result of starvation.

In 4 of the other cases the disease was sufficiently early to justify operation, and 3 were transferred to surgical wards. The 4th. refused to consider operation. The three who were transferred all had subnormal temperatures, mostly between 96 and 97, but all showed occasional rises to 99. No. 7773, who refused operation, was a more advanced case, and had a very variable subnormal temperature between 95 and 98.

Two other advanced cases were sent home unimproved. Neither showed signs of pyloric obstruction/

obstruction, but were cachectic. One had a regular subnormal temperature throughout, and the other a swinging subnormal, rising to slight pyrexia before discharge.

In a few cases of gastric carcinoma, early or advanced, a low temperature seems to be a part of the disease, not attributable to pain or vomiting, but the greater number of cases in this series were never subnormal.

APPENDICITIS and APPENDICULAR COLIC.

There were 8 such cases in the control group, and 4 in the subnormal group.

Of the controls, one was febrile, and two were transferred for operation in a few days; the remaining 5 were non-febrile, and were mostly chronic cases, two being cases of appendicular dyspepsia.

Three of the subnormals were children with appendicular colic. All were admitted after an attack of acute pain with vomiting and constipation, and all three had slight temperatures of about 99, coming down in a day or two. In the case of No. 6513 the temperature was a hectic subnormal for/

for a week, during which he had an attack of pain. In the second week the temperature settled to normal, with one fall after getting up. In the other two cases the temperature fell more gradually, becoming subnormal about the 5th. or 6th. day, and returning to normal in the second week.

No. 7917 had a history simulating that of duodenal ulcer, and was sent to a surgical ward after three week's medical treatment. At operation no ulcer was found, but a chronically inflamed appendix was removed, proving the case to have been one of appendicular dyspepsia, his temperature was regularly normal, except for two occasions when he had severe pain and flatulence, requiring an injection of pituitrin. On both occasions the temperature was 96 for 24 or 36 hours.

In all these cases the outstanding symptom was abdominal pain, and in the last case the temperature was only subnormal during an attack of pain. In the others the fall followed after relief of pain,and during the acute stage, when there was probably some degree of infection, there was slight pyrexia. It is worth noting that in the controls there were no cases of colic, and only/

only the cases transferred for operation had much pain.

ABDOMINAL TUBERCULOSIS.

In the control group there were 4 cases of abdominal tuberculosis, two of whom were febrile and two were normal. In the subnormal group there was only one case, a child of 9 with palpable glands, who improved very much during his 5 weeks in hospital. His temperature was variable throughout, with pyrexia and subnormal alternating. Before discharge in the 5th. week it became a swinging subnormal between 95 and 97. With only one case it is impossible to draw any conclusions.

OTHER CONDITIONS.

One case of carcinoma of the colon with subnormal temperature has already been described. In the control group there were 4 cases of malignant disease of the colon, and one of the rectum, all of whom had normal temperatures or slight pyrexia.

There were 2 cases of colitis, who were febrile at first and then normal, with no tendency to/

to become subnormal.

One case, No. 7579, was proved by X-ray to have a diverticulitis of the colon. He was ill and emaciated, but there was no stricture and he improved with dieting and tonics, and gained 17 pounds in 4 weeks. His temperature for the first fortnight was very irregular, between 95•4 and 99•4 becoming a regular subnormal from 96 to 97 in the third week, and a regular normal from 97 to 98 in the fourth. Probably his low temperature was due to under-nourishment, and was similar to subnormal temperature in starvation states.

There was one case of gastriocolic fistula, No. 6646, who had had a gastro-enterostomy done many years before for a gastric ulcer. The symptoms had recurred with in addition faecal vomiting, and on admission he was weak and emaciated, with constant diarrhoea and vomiting. He was transferred to the surgical side after a few days, and died after operation. His temperature was subnormal throughout, being mostly between 95 and 97, with a few isolated rises to 98. This was also a case of low temperature in semi-starvation.

There were two cases of chronic constipation in the subnormal group, and none in the control group. One of them, No. 6887, had a normal temperature for most of the time, with an interval of subnormal in the 4th. week for no apparent cause. The other, No. 6600, was nervous about himself, anxious and depressed, so that he might be included with the neuroses. His temperature was a hectic subnormal between 95 and 98 for a week, becoming more regular in the second, and rising to normal in the third similar to the temperatures observed in case of neurosis.

CONCLUSIONS./

C O N C L U S I O N S.

1. Subnormal temperature may be brought about by acute abdominal pain, as in gastric or duodenal ulcer, or appendicular colic. Sometimes the low temperature persists for long periods; in others it accompanies the attacks of pain, with an immediate rise to normal afterwards.

2. In starvation states, such as those causing difficulty in swallowing, vomiting or diarrhoea, the temperature is frequently very low, but tending to rise as recovery sets in.

3. A subnormal temperature may accompany a purely functional gastro-intestinal condition, such as hyper- or hypo-chlorhydria, dyspepsia or constipation. Probably these cases are fundamentally neuroses or anxiety states, which are factors in bringing about falls in temperature.

4. A few cases of malignant disease of the alimentary/

alimentary tract had subnormal temperatures, but the majority had normal temperatures, and nearly all were febrile at some time. A low temperature may be attributed to the associated malnutrition or semi-starvation, as the lowest temperature was observed in a case with extreme vomiting from pyloric obstruction.

5. During haemorrhage from an ulcer the temperature is not subnormal, but remains relatively high, with a fall to subnormal only after bleeding has stopped.

DISEASES OF THE URINARY SYSTEM

There were altogether 73 cases of disease of the urinary tract, 50 in the control group and 23 in the subnormal group.

DEATHS.

14 patients died as a result of disease of the urinary system, 6 in the control group and 8 in the subnormal group.

Among the controls, 2 cases died in uraemic coma with temperatures of 101; 2 who died of subacute nephritis had slightly febrile temperatures; one fatal case of chronic interstitial nephritis and one of carcinoma of the bladder were also febrile; so none of the fatal cases were even normal.

In the subnormal group one case died of acute nephritis, 2 of subacute nephritis, and 5 of chronic interstitial nephritis.

The case of acute nephritis, No. 7290, had been ill for ten days before admission, and died a fortnight later.

His/

His temperature was 95°4 on admission, rising to 98·4 at night, and running a very irregular course between 96 and 99 for a week. In the second week there was a slow but steady fall, until it reached 95°4 before death.

Of the subacute cases, No. 6698 had already been treated in the ward, and had relapsed after some months. He died 6 days after admission and ran a normal temperature except for a fall to 95°4 for 24 hours on the 4th day, and the last recorded temperature was 99°4. No. 8091 had had acute nephritis some months before, and had had symptoms again for the last 7 weeks. The day before admission he woke with headache and vomiting, and 24 hours later became comatose, On admission he was in deep coma, and never became conscious before death some hours afterwards. The temperature at first was 96, but rose during the day to 96°6 in the evening, and to 98°2 at 11 p.m. just before death.

Of the 5 cases of chronic interstitial nephritis, No. 7884 had normal temperature with occasional falls, and died with a temperature of 99.

Another/

Another No. 8012, died 36 hours after admission with a temperature continuously between 96 and 97, the last record being 96·6. In the other 3 cases there were periods of subnormal temperature lasting for days or weeks, falling to lower levels as the disease advanced but with a definite rise to normal or higher shortly before death. I was able to watch one of them, No 8659, for a considerable time. He was first admitted in August 1932 with typical signs of chronic renal disease, arterio-sclerosis, high blood pressure, and commencing heart failure. During the 3 weeks he spent in the ward his temperature was regularly about 98, he improved very much, and was walking about before discharge. In October 1932 he was readmitted, very ill, with increasing cardiac weakness and a left-sided pleural effusion. This time his temperature was continuously about 97 with one fall to 96. Again he improved and walked out after 5 weeks, but in January 1933 he returned to hospital, with increased oedema of the limbs, heart failure, and a right-sided hemiplegia. For 4 weeks his temperature was regularly about 96, with occasional falls to 95·4; but in the 5th week it became irregular and swinging between 96 and 98 rising/

rising suddenly to 100 before death.

In these cases it appears that a subnormal temperature is a definite part of advancing renal disease, and increases the gravity of the prognosis. In all of them some associated condition was present such as arterio-sclerosis, heart failure or a cerebral vascular lesion which may have had an influence on the course of the temperature; but all these conditions are secondary to and essentially part of chronic nephritis and it seems fair to attribute the low temperature to the underlying kidney disease.

ACUTE NEPHRITIS.

There were 3 cases of acute nephritis in the control group, all with normal temperatures, and 5 in the subnormal group.

One of the subnormals No. 7290, died with a terminal fall as previously described. Two others were admitted in coma. No. 7127 had a temperature of 95 on admission and ran an irregular subnormal temperature between 96 and 98·4 for five weeks and did not settle to normal before discharge. The second, No. 7198 had also had convulsions before admission/

admission in coma and his temperature was 98·4 on admission. For 6 weeks it ran a normal course, but became a regular subnormal after getting up in the 7th. week and did not become normal before discharge in the 8th. week.

In the remaining two cases No. 7238 had a normal temperature with some isolated falls; and No. 7738 had a normal temperature for two weeks while lying in bed, and then became subnormal for the next two weeks after getting up.

Thus of the 7 cases of acute nephritis who recovered 4 showed no tendency to run a subnormal temperature; two others were normal while lying in bed but fell to subnormal after getting up, and only one ran a subnormal temperature throughout. The one fatal case also had a persistently low temperature, with a terminal fall; so possibly a prolonged period of subnormal temperature is a grave sign, but there are not enough cases for any certainty.

SUBACUTE NEPHRITIS.

There were 10 cases of subacute nephritis, 7 in the control group and 3 in the subnormal group.

Of the subnormals, 2 out of 3 died as previously described, and the third, No. 6662 had a very erratic temperature, often hectic and ranging between 94 and 98·4.

Among the controls there were also two deaths with slight pyrexia, while the remaining 5 were non-febrile.

With so few cases it is impossible to draw conclusions, but the fatal cases suggest that a rise to pyrexia or a fall to subnormal may well be equally serious points in prognosis.

CHRONIC/

CHRONIC NEPHRITIS.

In the control group there were 10 cases of chronic nephritis, one of whom died with slight pyrexia, while the 9 who improved had normal temperatures.

In the subnormal group there were 7 cases of whom 5 died as previously recorded, a figure which suggests that a subnormal temperature is a grave sign in chronic nephritis. It also goes to support the suggestion that it is a serious sign in acute and subacute nephritis.

Of the two who were relieved, No. 6504, whose chart is reproduced, was admitted with a blood-pressure of 220/164, and commencing heart failure. His temperature was subnormal throughout, swinging or hectic in type, and ranging between 94 and 98. No. 7859 had no sign of heart failure, and the blood-pressure was not so high, being 182 /124. His temperature was normal for 3 weeks while lying in bed, but as soon as he got up it ran a subnormal course between 95·8 and 96·8. This chart was similar to some of those of the less advanced cases of myocardial disease, being normal while/

while at rest and falling to subnormal with increase of exertion. The former chart was like those of heart failure, a factor which was present in this case; and probably the prolonged subnormal temperature was a sign of a bad prognosis.

U R A E M I A.

In the control group there were 3 cases admitted with uraemia, of whom two died in pyrexia, while one whose temperature was normal was relieved.

Only one case occurred in the subnormal group, No. 7629, who was brought in in coma, following convulsions. He was relieved after lumbar puncture, and improved on theominal. His temperature was 95·6 on admission, but rose at once to normal and remained at normal levels until discharge

In none of these cases was there any tendency for the temperature to run a subnormal course, which suggests that the low temperature in chronic nephritis has nothing to do with the degree of uraemia.

OTHER CONDITIONS.

There were 16 cases of renal colic of whom only 3 were in the subnormal group. One of them had a temperature of 96 on admission, rising next day to 99, and the other two came in with slight pyrexia falling to subnormal once on the second day when pain had been relieved; so that none of them was truly subnormal.

There were two cases of hydro-nephrosis, one of whom had a normal temperature with one isolated fall to 96, while the other was normal throughout, with several falls to subnormal.

One case of pyelo-nephrosis and one of peri-nephric abscess had occasional falls to 96 alternating with high pyrexia.

One old man was admitted for three weeks' medical treatment before having an operation for enlarged prostate. His temperature was continuously about 96 the whole time, which was probably to be attributed to his debilitated state and not to the local condition.

C O N C L U S I O N S./

C O N C L U S I O N S.

1. A subnormal temperature may accompany any form of nephritis, acute, subacute or chronic, and taking the relatively high death-rate into consideration, it may be regarded as a sign of a bad prognosis. It may be aggravated by associated secondary conditions, such as heart failure, arterio-sclerosis, or cerebral vascular lesions.

2. Subnormal temperature is not an essential feature of uraemia or any other disease of the urinary tract, though accidental falls may occur in any of them.

DISEASES of the LIVER and BILIARY TRACT.

There were 22 such cases, 12 in the control group, and 10 in the subnormal group.

D E A T H S.

Two cases in the control group died, one of alcoholism and cirrhosis of the liver, and the other of malignant disease of the liver. In both the temperature was normal.

There were also two deaths in the subnormal group, both with cirrhosis, and one with superadded acute atrophy of the liver. This case, No. 7018, died 6 days after admission, having run an irregular subnormal temperature between 95·4 and 97 until just before death, when there was a sharp rise from 95 4 to 99 4, a swing of 4 degrees. At the post-mortem a large cirrhotic liver with recent acute atrophy was found. The other case, No. 8299, was in the ward for nearly 4 weeks before he died, and for the first fortnight the temperature was normal. In the third week a steady fall to lower levels began, and reached 95.4 in the 4th. week. 12 hours later there was a sudden rise to 98 and the/

the patient died shortly afterwards.

CIRRHOSIS of the LIVER.

There were only 4 cases in all, one in the control group, who died, and 3 in the subnormal group, two of whom died as recorded above. In both the temperature showed a fall during the last few days with a sudden terminal rise just before death. The chart of the case who survived is reproduced. He was admitted during a haematemesis, and after one day of subnormal temperature there was a rise to normal until haemorrhage stopped. While on a restricted diet in the first week, his temperature was continuously subnormal, but rose a little in the second week even before an increase of diet. An attack of abdominal pain led to a reduction in the diet, and the temperature again became subnormal until discharge.

It is not possible to draw any conclusions from so few cases, but there is a suggestion that a terminal fall may occur before death from cirrhosis of the liver, and in the last case it seems likely that deficiency in food supply and the effects of haemorrhage were the essential factors/

factors in causing a subnormal temperature.

J A U N D I C E.

One case of malignant disease of the liver with jaundice occurred in the control group, and died with a consistently normal temperature.

One case of catarrhal jaundice and one of toxic jaundice occurred in the subnormal group.

The former, No. 7846, had a regular subnormal temperature in the first week, rising to normal in the second during recovery, but with a fall to subnormal for two days during X-ray examination. The latter, No. 7448, had a normal temperature for most of the time, with a fall to subnormal for several days in the second week. Again it is impossible to make deductions from so few cases.

C H E L E C Y S T I T I S.

There were 4 cases among the controls, of whom one was febrile and 3 were normal.

There were 3 cases in the control group. One of them, No. 8536, had a normal temperature with one isolated fall to 96. Another, No. 6667, had a duodenal ulcer as well as gall-bladder trouble;/

trouble; he was admitted at the end of an attack of pain with jaundice, and ran a persistently subnormal temperature, mostly from 96 to 97, but with a fall to 95 for two days during X-ray examination No. 7392 also was in an anxiety state, and ran a temperature from 96 to 97 in the first week, rising a little in the second, and becoming normal in the third. He had one attack of pain and vomiting in the ward, during which there was no change in the course of the temperature. Thus the only two cases who had a tendency to run a subnormal temperature were suffering from complications both of which may be associated with subnormal temperature.

C H O L E L I T H I A S I S.

There were 4 cases of gallstones in the control group, and 2 in the subnormal group.

One of the latter was also mentally deficient, and had had attacks of biliary colic for a year. His temperature was variable, alternating between subnormal and high fever. It was not possible to attribute the periods of low temperature to attacks of pain, for an attack might be/

be accompanied by a subnormal, normal or high temperature, and the temperature had no definite relation to the symptoms. The other case was admitted during an attack of biliary colic with a temperature of 96, which rose to pyrexia in the evening, and he was transferred a few days later for operation, still with a high temperature. Possibly the initial fall was the result of acute pain, and the later rise to pyrexia was due to some degree of infection.

C O N C L U S I O N.

A subnormal temperature was observed in some cases of cirrhosis of the liver, especially in the fatal ones. Otherwise a subnormal temperature was not common, except in cases with some other complication.

DISEASES of METABOLISM.

There were 28 cases of metabolic disorders in all, 14 in each group. In the control group there were 13 cases of diabetes mellitus and one of carcinoma of the pancreas; while in the subnormal group there were also 13 cases of diabetes, and one of gout.

The case of gout was not truly subnormal as he had a normal temperature with one isolated fall to 96.

DIABETES MELLITUS.

The diabetic charts were among the most interesting in the whole series, and a study of the temperature may be of assistance in the management of the case, especially in regulating the diet.

Of the 13 cases in the control group, 3 were admitted in coma, and received insulin immediately, in spite of which one died. All 3 were febrile on admission, and the two who recovered on insulin and glucose became normal in a few days. One other had pulmonary tuberculosis as well as diabetes and ran a high swinging temperature until he was transferred to a sanatorium. Four others

were/

were cases with long histories and mild symptoms, who had relapsed recently; 2 of them were already taking insulin, and were quickly controlled by increasing the dose, and 2 were controlled by dieting only. The remaining 4 were recent cases who required insulin to check the glycosuria, and all ran normal temperatures.

None of the 13 subnormal cases were in coma, though several had considerable acetonuria, and there were no deaths. Seven were old-standing cases and 6 were recent.

The 7 old cases were admitted with relapses of varying degrees of severity. One who had never had insulin recovered with dieting only; 3 others had hitherto kept well on diet but now needed insulin; and 3 were already taking insulin regularly, and required to increase the dose. The chart of No. 8563 is included as being typical of a all. He had had diabetes for two years, and at first had been given small doses of insulin, but had kept well on diet only until he had a recurrence of symptoms 3 months before. On admission there were large quantities of sugar and acetone in the urine; so on the 3rd. day he was put on a 1500-calorie/

1500-calorie diet with insulin. The temperature was normal on the first few days, but began to fall as soon as the diabetic diet was begun, and reached 96 on the 6th. evening. In the second week it still rose to at times 97 or a little higher, but gradually settled around 96, and remained so until discharge in the 4th. week, even with a diet of 2800 calories, insulin and no glycosuria. The typical points are the normal temperature on admission, the fall to subnormal during the first ten days on the 1500 calorie diet, and the failure to rise to normal on a 2800 calorie diet with insulin to cover it. Evidently the presence of glycosuria does not produce a fall of temperature, and its control by insulin does not raise the temperature to normal; so it seems likely that the low temperature is the result of insufficient food supply, and that a basal diet is not enough for heat formation even when the patient is lying in bed, while a maintenance diet cannot raise the temperature to normal after getting up.

The six recent cases were more dissimilar and two of their charts are reproduced.

No. 6555 was admitted as a case of anxiety

anxiety neurosis, with various peculiar symptoms dating from a time of trouble and worry. On routine examination sugar and acetone were found in the urine, and the blood-sugar curve was typically diabetic. His temperature was an irregular subnormal one throughout, becoming more hectic and falling as low as 93 on the 10th. evening --- the lowest temperature observed in the whole series. At this point he was given 5 units of insulin, and next morning the temperature rose to 97·4, though whether the rise was the direct result of the insulin is doubtful. However, the temperature never fell so low again, and ran an irregular course at a rather higher level, though it was still subnormal on discharge in the third week. Perhaps the anxiety state had a good deal to do with the lowness and irregularity of the temperature.

No. 6525 was an old man of 65 with mild diabetic symptoms, which were controlled by diet without insulin. His temperature was persistently subnormal, usually between 94 and 96 but sometimes lower still, and swinging up to 97 and 98 in the 4th. week, with falls to subnormal in between. This/

This chart is unlike any other diabetic one, and raises the question as to whether some other undiagnosed condition, such as myocarditis, were not present; or whether old age could account for the temperature course.

No. 7898 was a very mild case, who had been kept on a low diet at home for 3 months. The temperature was subnormal on admission, and remained so for a week, during which time he became sugar free, and the diet was increased. In the second week the temperature became normal, and he was discharged on a more liberal diet than the one he had been taking before admission. This case also supports the suggestion that the low temperature in diabetes is really the result of under-nourishment, and not of faulty metabolism or loss of sugar.

The remaining 4 cases had temperature charts very similar to those of the 7 old cases in that the temperature was normal on admission and fell during the first week on the 1500-calorie diet, remaining subnormal for a period of weeks afterwards. The differences were in degree and not in type, for the initial fall was lower than in/

in the chronic cases, often going below 95 and the later period of subnormal temperature was a more irregular. None of them had returned to normal before discharge.

CONCLUSIONS.

1. A subnormal temperature is frequently a definite characteristic of diabetes mellitus, and the fall is temperature may be very profound and very prolonged.

2. A subnormal temperature is not associated with diabetic coma and is not related to the amount of sugar or acetone in the urine. Insulin does not raise the temperature nor does the cessation of loss of sugar and the low temperature seems to be produced by insufficient food for heat formation.

3. As 50% of the cases of diabetes did not run subnormal temperatures, it appears that the diets in general use are sufficient for some patients but not for others. It might therefore be advisable to study the temperature as a guide as to whether individual cases are getting an adequate diet for individual needs.

DISEASES of the ENDOCRINE GLANDS.

There were 18 cases of diseases of the endocrine system, 12 in the control group, and 6 in the subnormal group.

The control group consisted of 4 cases of hyperthyroidism, 1 of carcinoma of the thyroid, 2 of hypo-pituitarism, 1 of diabetes inspidus, and 3 of Addison's disease. The last 3 were all febrile, and 2 died with high temperatures; and 2 cases of hyper-thyroidism were also slightly febrile, while the remaining cases were all normal.

In the subnormal group there were 3 cases of hyperthyroidism, 2 of acromegaly, and 1 of Addison's disease.

D E A T H S.

There were 4 fatal cases of Addison's disease, 3 among the controls and one of the subnormals. The two former were febrile throughout; and the subnormal case and a high temperature for most of the time, but for several days in the last week of life it was swinging between 96 and

98, though before death it was again high for three days. Post-mortem examination showed malignant disease of the supra-renals with metastases in the brain.

H Y P E R T H Y R O I D I S M.

In a condition characterised by increased metabolism, it is reasonable to expect a temperature of at least normal level or perhaps higher, and this was the case in the control group, for 2 of the patients had normal temperatures, and 2 had slight pyrexia. There were, however, 3 cases in the subnormal group, whose temperatures were low for long periods, and swinging or hectic in type between 95 and 98. In all their histories there was a specially marked reference to their being extremely nervous; two of them were labelled as neuroses, and one was given a course of weir-Mitchell treatment behind screens. With rest and relief of symptoms the temperature in all cases rose to normal with frequent falls to subnormal. It seems likely that the nervous state had something to do with the subnormal course of temperature.

A C R O M E G A L Y.

One case of acromegaly was admitted after operation, at which a pituitary adenoma had been removed. His temperature was not truly submormal, as there were only a few accidental falls. The other case, No. 7627, was in the ward for nearly two months, and operation was not advised. For 4 weeks the temperature was continuously normal, but in the 5th there were several falls lasting for a couple of days at a time. In the 7th week it became continuously subnormal, between 96 and 97, and a little lower in the 8th. It appears probable that this was one of the few cases of intra-cranial tumour in which a falling temperature was associated with increasing intracranial pressure.

C O N C L U S I O N S.

1. In spite of increased metabolism, a few cases of hyperthyroidism ran subnormal temperatures for long periods. In all of them nervous symptoms were excessive and it seems possible that the functional state was responsible for the low/

low temperature rather than the thyroid disorder.

2. In one case of acromegaly the temperature fell slowly from normal to subnormal, and it is possible that this was one of the few cases of low temperature accompanying an increasing intracranial pressure.

DISEASES of the BLOOD and BLOOD-FORMING ORGANS.

There were altogether 41 cases of diseases of the haemopoietic system, 24 in the control group, and 17 in the subnormal group.

D E A T H S.

Eight cases died, 5 among the controls and 3 among the subnormals. Of the fatal cases in the control group, 1 case of acute lymphatic leukaemia died with a continuously normal temperature; one of myleogenous leukaemia had a terminal rise to 100; 1 case of splenic anaemia and 2 of lymphadenoma were febrile throughout.

In the subnormal group there was 1 case of myelogenous leukaemia, 1 of splenic anaemia, and 1 of lymphadenoma. All were febrile for part of the time, and all died with high temperatures, and in the two latter there were only occasional falls. Only in the case of myelogenous leukaemia the temperature was a swinging subnormal for the first ten days, before rising to high pyrexia.

Evidently fever is more characteristic of advancing disease of the haemopoietic system than/

than a subnormal temperature, and is a more serious sign in prognosis.

PERNICIOUS ANAEMIA.

There were 9 cases of pernicious anaemia in the control group and 6 in the subnormal group.

In a disease so characterised by weakness, debility, and anaemia one might expect to find the temperature commonly subnormal, but the opposite is actually the rule. In the majority of charts the striking point is that the temperature keeps up to the higher limits of normal or even higher. Of the 9 cases among the controls, 4 were slightly febrile and 5 had normal temperatures.

Of the subnormals, 2 had normal temperatures with occasional falls; and another had a fall to subnormal for 5 days on first getting up, though the temperature was otherwise normal. In two others the temperature was more irregular, ranging between slight pyrexia and subnormal, and the chart of No. 8572, is reproduced though it is hardly typical of pernicious anaemia. However, it illustrates the temperature, usually normal, but with/

with a tendency to rise above and to fall below normal.

The 6th case No. 7257, was in the ward for over 4 months, so that his temperature was watched for a long time. He was a child of 8, who was sent in covered with purpuric spots, vomiting blood, and with severe nose-bleeding. The blood picture was typical of pernicious anaemia, and the colour index was above unity, so he was put on a liver and fresh fruit diet. During the first fortnight he went on vomiting blood, and at this time the temperature was normal, between 97 and 98·4, with a fall to 96 for two days after bleeding was at an end. In the 4th week he had another haemorrhage, and this time there was slight pyrexia, about 99, which continued for the next 3 weeks. In the 7th week he was so ill that a blood transfusion was necessary, and after this he began to improve. The temperature fell to normal, and in the 10th week to subnormal, and remained so until the 18th, after which it became continuously between 97 and 98.

This history is in accord with the fact previously/

previously referred to that during haemorrhage the temperature is not subnormal, nor in extreme anaemia. This case was the only one of 15 cases of pernicious anaemia with a definite subnormal period during convalescence.

MYELOGENOUS LEUKAEMIA.

In the control group there were 2 cases, one of whom died, while the other was improved with irradiation of the spleen. Both were febrile for part of the time.

In the subnormal group there were 3 cases, one of whom died as previously described. Another had a normal temperature with a fall to subnormal for two days on first getting up. The third, No. 8569, I watched personally for 6 weeks. He was admitted for severe epistaxis, and an enormous spleen was found with a white cell count of over 300,000. The nose and antrum had to be packed for over a week to check the bleeding, and at this time the temperature was about 99. As soon as the haemorrhage was controlled, he was given deep X-ray treatment to the spleen, which became smaller, while the white count reached 6,000/

6,000 before discharge. After the second week the temperature became regularly normal, except for a fall to 96 for several days in the 5th week, for which there was no obvious cause.

LYMPHATIC LEUKAEMIA.

There were 2 cases of lymphatic leukaemia, one in each group. The control case died after running a normal temperature. The subnormal case went home after 3 weeks, getting worse in spite of X-ray therapy. His chart is included to show the irregular swinging subnormal temperature, rising to pyrexia as the disease advanced.

LYMPHADENOMA and LYMPHOSARCOMA.

In the control group there were 5 cases of lymphadenoma and 1 of lymphosarcoma, of whom 4 were febrile including 2 fatal cases, and 2 were normal.

In the subnormal group there were 3 cases of lymphadenoma, and one of lymphosarcoma. The latter was an old man who ran a temperature between 96 and 97, and was unimproved on discharge. One case of lymphadenoma died as already/

already described; one was not improved, and the third was definitely better after X-ray treatment. The case who was improved ran a swinging subnormal temperature in the first week, followed by a period of high fever, and again of swinging subnormal, settling to a fairly regular normal before discharge. The advancing case had a swinging subnormal temperature for the first week, rising to normal and then to slight pyrexia.

OTHER CONDITIONS.

One case of splenic anaemia died after having a normal temperature for 2 weeks, and high pyrexia alternating with subnormal in the 3rd.

One case of haemophilia was admitted after an attack of melaena and epistaxis, but had no haemorrhage in the ward. His temperature was normal for the first 5 days, and fell gradualy to 95·6 on the 7th day. This was followed by a gradual to normal again, and was like the falls after haemorrhage so often seen in other cases with bleeding.

One case of purpura following on a septic wound was in the ward for 3 weeks, and had two/

two crops of purpuric spots after getting up though none occurred while he was lying in bed. He had a normal temperature except for two falls to 95·6 after aperients.

C O N C L U S I O N S.

1. In diseases producing anaemia or associated with harmorrhage a high temperature is more common than a subnormal one, and only 2 cases of lymphadenoma and 1 of myelogenous leukaemia had low temperatures for a week. One case of pernicious anaemia had a low temperature after convalescence was well advanced. It would appear that loss of blood stimulates the heat regulating mechanism of the body to keep the temperature at least at normal levels.

DISEASES of BONES, JOINTS, and MUSCLES.

There were 81 cases of diseases of the locomotory system, 54 in the control group, and 27 in the subnormal group.

D E A T H S.

There was only one death among the cases included under this heading, one of sarcoma of the cervical spine with extensive paralysis. In the first week the temperature was from 96 to 97, rising to slight pyrexia in the second week, and again falling to subnormal, until just before death in the third week when it rose to 99·2.

RHEUMATOID ARTHRITIS.

There were 22 cases of rheumatoid arthritis among the controls, of whom 4 had a certain amount of fever, while 18 were non-febrile.

Among the subnormals there were only 9 cases. Three of these were recent cases; one was febrile with occasional falls to subnormal alternating with pyrexia, and the other two had normal temperatures with isolated falls; so that none/

none of the more active cases had any tendency to run subnormal temperatures.

The 6 more chronic cases all had a period of subnormal temperature on first being admitted. Two of them had sciatica from disease of the sacro-iliac joint, and were much improved by injections of strychnine; with relief of pain in both the temperature rose to normal levels. One who was bed-ridden had a subnormal temperature throughout. Another had severe pain in the back, and the temperature was between 95 and 96 until the second week, when he became febrile, and remained so until discharge. Two others were subnormal for the first 10 or 12 days, and then gradually became normal as they improved.

It is not easy to conclude what were the factors causing a fall to subnormal in some cases, though not in the majority. It is possible, however, that pain and want of sleep were important causes, and perhaps inability to take exercise also diminished heat production in the muscles, and helped to lower the temperature. The only case who was completely bedridden was the only one whose temperature was never up to normal levels.

TUBERCULOSIS of BONES and JOINTS.

There were 9 such cases in the control group, of whom 2 were febrile and 7 were normal.

In the subnormal group there were only three cases, all of disease of the spine, with marked pressure symptoms in two, and slight in the third. The two cases with paralysis were both in the ward for 4 months. In one case the temperature was usually normal with short periods of low temperature, especially in the 4th month; the other case was febrile at first, and than ran a subnormal temperature for many weeks. The third case had a subnormal temperature for a couple of days after admission, and then became normal until discharged to a sanatorium.

With so few cases it is impossible to draw any definite conclusions, but it is a striking fact that the only subnormals included under this heading were cases of spinal caries with pressure on the cord. Evidently tuberculous disease in bone does not itself cause a low temperature, and some other factor must be found to account for the fall to subnormal.

MUSCULAR RHEUMATISM and FIBROSITIS.

There were 4 cases of rheumatic affections of the muscles or fascia among the controls, and 5 in the subnormal group.

One of them, No. 6502, was also a case of anxiety neurosis, and had a swinging subnormal temperature between 94 and 96 for ten days, becoming more regular with improvement, though still subnormal until discharge. The 4 others had great pain and stiffness of the back, and all had regular subnormal temperatures from 96 to 97 for the first two weeks, gradually becoming normal during recovery. Again it seems likely that the subnormal period was the result of pain and perhaps want of sleep.

MUSCULAR ATROPHY and PSEUDO-HYPERTROPHIC MUSCULAR DYSTROPHY.

It has already been shown that diseases of the nervous system with muscular wasting may be associated with subnormal temperature, so it seems natural to suppose that cases of muscular atrophy and muscular dystrophy should also run low temperatures/

temperatures. Such, however, was not the case. Nine patients with pseudo-hypertrophic muscular dystrophy never had temperatures below normal, and the only one who had a subnormal temperature was running about freely, and wasting was not advanced. His temperature ran from 96 to 97 for several weeks in the ward, during which time he was not confined to bed, and was quite active.

There were two cases of muscular atrophy in the subnormal group. One of these was a case of atrophy of the peroneal muscles following an accident to the leg; there was little wasting or true disability, but there was a large functional element, which was improved with suggestion. His chart is reproduced as an example of a hectic subnormal, and probably the functional state was more responsible for the temperature than the muscular wasting. Another, No. 7880, was an old case of myotonia atrophica, with marked wasting and extremely helpless. His temperature was between 95 and 96·4 throughout, and did not once touch 97, in two weeks, so that his chart resembled those of wasting of the muscles in nervous disease.

OTHER CONDITIONS.

There were two cases with pain in a limb with no organic lesion. One was a healthy boy of 15, who had had numbness and tingling in one leg for several weeks, followed by pain in the knees shooting down to the ankle. No nerve lesion or joint affection could be discovered, the pain was not very severe, and he walked without a limp; in a fortnight the pain was completely recovered. His temperature was from 96 to 97 at this time, with some falls to 95, and never became normal. The other was also a healthy boy of 17, with pain in the under aspect of one heel. No nerve lesion could be found in that limb, but on the other side the knee and ankle jerk were absent. He was carefully observed for nearly 4 weeks, and the pain gradually wore away, without any explanation of the cause being found. At first he had a good deal of pain at night, and the morning temperature was nearly always 96 or lower; but in the second week he slept better, and the morning temperature was 97. On being allowed up he had pain during the day, and for about 10 days the evening temperature/

temperature was 96. With relief of pain the temperature became a regular normal one.

Another case had ruptured a muscle in the arm as a result of lifting a heavy weight, and had had pain and swelling ever since. His temperature was persistently subnormal for 3 weeks, seldom rising much above 96.

The chart of No. 6597 is reproduced as an illustration of a subnormal temperature associated with a painful condition. He had had a finger amputated after whitlow 2 years before, and had had 5 operations since on account of extreme pain in the scar. He was transferred for ten days to the medical side for examination of the nervous system but no organic lesion was detected. During this time he lay in bed, with his hand resting on a pillow, quite unable to use it or even put it in his pocket because of the extreme tenderness of the stump. His temperature was usually between 95 and 96, with two rises to 98.

One functional case of muscular cramps had a normal temperature with occasional falls which could not be attributed to pain.

Another/

Another was admitted with an old fracture of the spine and a functional paresis, and made a good recovery with Faradism and exercises. His temperature was usually normal with frequent falls to subnormal.

CONCLUSIONS/

C O N C L U S I O N S.

1. In rheumatoid arthritis a subnormal temperature was not common, but was observed in a few cases in whom pain was a marked symptom.

2. A subnormal temperature was not common in bone and joint tuberculosis, and was only observed in 3 cases of spinal tuberculosis with pressure on the spinal cord.

3. In cases of muscular rheumatism with much pain, a subnormal temperature was comparatively common, and lasted until pain was relieved.

4. In some other conditions with pain a subnormal temperature was observed, and coincided with the times when pain was most severe.

5. In a few cases of muscular atrophy with wasting the temperature was very low, but not as a rule in pseudo-hypertrophic muscular dystrophy.

INFECTIVE CONDITIONS.

Under this heading are included all diseases due to some infective process and not already described with the other systems, such as acute and subacute rheumatism, chorea, glandular fever, septicaemia, pyaemia, and other conditions. Naturally the majority were febrile, and 45 are contained in the control group, but 13 were subnormal at some stage of disease.

ACUTE RHEUMATISM.

There were 15 cases in the control group, and 6 in the subnormal group.

Of these, 3 were febrile on admission, became normal on salicylates, and had a few isolated falls to subnormal during convalescence. So that 18 out of 21 cases did not run a consistently low temperature. In the 3 remaining cases there was a long period of subnormal, falling exceptionally low in one case.

No. 6518 was a mild case admitted during a first attack with slight fever, which fell to 96 on the third day, and then became a swinging subnormal/

subnormal from 95 to 97, and later 96 to 98, but never returned to normal before discharge. No. 7403 was a more severe case, also a first attack, whose temperature fell on salicylates to 96 on the 5th day. It remained subnormal until the 3rd week, when it rose to normal by degrees. No. 7311, whose chart is reproduced, was admitted during a second attack with signs of old endocarditis and slight pyrexia for a few days. On large doses of salicylate the temperature fell to normal but the joint symptoms were not relieved until the 11th day, and the dosage was not reduced until then. Meantime the temperature went on falling, and reached 93·2 on the 11th day. At this point the salicylates were stopped for 24 hours, and the temperature rose to 98. But when salicylates were recommenced in smaller doses it fell again to between 96 and 97.

Thus in 3 cases of rheumatic fever a subnormal temperature perisisted for a matter of weeks during administration of salicylates, and in one case the fall was extreme. It is of course possible that the low temperature had nothing to do with the drug, but was the result of some other unexplained cause/

cause; but considering the antipyretic properties of salicylate, it is quite possible that in some individuals it may have an excessive action on the temperature. It may well be advisable to watch the temperature during administration of salicylates in large doses, and regulate the dosage by the effect on the temperature as well as by the relief of symptoms.

SUBACUTE RHEUMATISM.

There were 2 cases of subacute rheumatism, one in each group. The subnormal case was febrile on admission, became normal on salicylates, and then developed pericarditis and was again febrile, in the third week the temperature became a regular subnormal, but alternating with occasional attacks of pyrexia until the 8th week when he was discharged. The temperature was unsettled until the end, varying from subnormal to pyrexia, and never became normal.

M A L A R I A.

One case was admitted during an attack of malaria, and ran a high temperature for several days/

days, swinging from 96 to 101 or more in 12 hours. The attack was controlled by quinine, and on the first day after the fever, the temperature was about 95 for 24 hours, after which the quinine was stopped, and the temperature settled in a day or two to normal. This fall for a day at the end of a malarial attack was also seen in some cases of malarial treatment for general paralysis, and it is a question whether this fall should be attributed to the quinine, or whether it is part of the course of the infective process, like the fall after pyrexia in lobar pneumonia.

POST-INFLUENZAL DEBILITY.

In the control group there were two cases of post-influenzal debility, two in the subnormal group were both admitted with debility following an attack of influenza, and made a rapid recovery with rest in bed and tonics. The temperature was between 96 and 97 for the first week, rising to normal, and remaining so after getting up in the second week.

CHRONIC/

CHRONIC MERCURIAL POISONING.

Two workers from a factory were admitted with signs of mercurial poisoning. No. 7323 had a normal temperature with isolated falls to subnormal in the first week; this was succeeded by a febrile interval, but in the third week the temperature became a regular subnormal, between 95 and 96 for part of the time, rising slowly, but not up to normal before discharge. No. 7372 had an irregular subnormal temperature for 2 weeks, falling as low as 94·6. As he improved the temperature level became higher, and was regularly normal in the 4th week.

One child of 13 was found to have a chronic paranasal suppuration. He was sent in with a history suggestive of diabetes, but there was no glycosuria, his urinary symptoms disappeared with training, and when the nasal condition was found he was transferred to another ward. His temperature was normal with occasional falls.

C O N C L U S I O N S.

1. In acute and subacute rheumatism a subnormal temperature was uncommon, but did occur in a few cases, and in one the fall was excessive, probably to a dangerous level. Although salicylates do not usually cause a fall below normal, in certain individuals there may be a fall far beyond normal, and it may be wise to watch all temperatures during administration of salicylates, and regulate the dose by the temperature as well as by the symptoms.

2. Possibly quinine has the same effect in malaria, and may cause a fall to subnormal after checking the febrile attack

3. Subnormal temperatures also occurred for long periods in two cases of chronic mercurial poisoning, but it is not possible to make any deductions from only two cases.

OCCASIONAL FALLS of TEMPERATURE to SUBNORMAL.

In the foregoing discussion of the case records frequent reference has been made to occasional falls of temperature from normal to subnormal. These falls have been regarded as accidental and not part of the disease under treatment, and although they were of short duration and had no influence on the course of disease, still they cannot have been altogether without significance.

A morning fall after an aperient dose was very common, and in some cases recurred repeatedly as is illustrated in the chart of No. 6582, who was convalescent after lobar pneumonia. Such falls of course had no effect on the pneumonic condition, but cannot have been beneficial to a convalescent. They show, too, that the temperature was unstable until the 5th. week, when an aperient had no effect.

These falls after aperients may be explained in two ways. One possibility is that purgation causes excessive loss of body heat, and so leads to a lowering of the temperature. The other suggestion/

suggestion is that purgation causes excessive loss of body heat, and so leads to a lowering of the temperature. The other suggestion is that a purgative may cause colicky pain, and sleep is disturbed. A fall during pain may be of the nature of a shock, and is reflexly brought about through the nervous system.

An even more common cause for a temporary fall was getting up for the first time. It may be argued that on getting up the patient is chilled, and that local cooling of the skin produces a fall in the external temperature while the internal temperature is unchanged. But getting up after a serious illness means merely sitting in a chair for ten minutes in the middle of the day, and the patient is warm in bed hours before the evening temperatures are taken, while the fall is nearly always on the following morning. One man who had been in bed for 7 weeks was allowed up in this way for ten minutes, and was so tired that he misread the clock and declared that he had been forgotten and left for over an hour. His temperature that night and the following morning was 96, the only falls in a long illness. He

was/

was so tired the next day that he refused to get up. Other cases, though less obviously tired, had falls on getting up, which seemed to be the result of fatigue alone.

In some cases the fall was repeated for several days, and in cases of heart failure the fall lasted for days or even weeks. It appeared as if the slight exertion of getting up and sitting in the ward was too much for the failing circulation, and the formation of body heat fell below normal.

Another frequent cause for a morning fall was loss of sleep the preceding night. In the majority of such cases pain was the cause, and pain alone may bring about a fall. However, in a few cases of diseases without pain there was a morning fall after wakening early, and the chart of No. 6651, a case of Jacksonian epilepsy, is included as an illustration. Anyone who has wakened some hours too early is acquainted with the resulting mental depression and bodily lassitude; and it is not surprising that the temperature should also be depressed.

In a number of cases there was a fall after an X-ray, especially after a S.T.I.P.P. examination/

examination, or during a barium series. Most of the patients were not well enough to walk to the X-ray department, and were taken there on trolleys or wheel chairs; but even so the fatigue was evidently too much for them. Perhaps too, in the ulcer cases the preparation, special diet, and taking of barium combined to have some ill effect.

In others there was a fall after lumbar puncture, probably as the result of a nervous reflex. In a few the fall followed an intravenous injection, but not as a rule.

In about 50% of cases there was nothing in the progress notes to indicate the cause for a temporary fall, but the cause must have been there. It is not essential to record every disturbed night, headache or minor upset during convalescence, so these trifles are not entered in the notes. Only the temperature chart remains as the permanent record of a passing disturbance.

Although these falls do not seriously retard recovery, they are an indication that all is not well, and that a little extra care in management is advisable. In such individuals the dosage of aperients should be more carefully supervised, and the effects of fatigue guarded against.

SEASONAL/

SEASONAL VARIATION.

An interesting point is that subnormal temperatures are much commoner in winter than in summer. On adding up all the cases with subnormal temperatures according to the month in which they were admitted, I found that the lowest number was 12 in September; with the approach of winter the number increased, reaching 44 in November, 54 in December, and the maximum of 68 in March. On the other hand some of the lowest and most prolonged subnormal temperatures were noted in the summer months, while many of the winter low temperatures were the accidental falls. However, this observation on the seasonal variation of subnormal temperatures does emphasise the importance of warmth in the care of convalescents and patients.

AGE/

AGE INCIDENCE of SUBNORMAL TEMPERATURE.

It has been stated that old age may be a cause of subnormal temperature, but these observations show that a subnormal temperature may occur at any age. It was noted in 11 children under 10 years of age, and in only one old man of over 80. The greatest number of subnormal temperatures occurred in the decade between 50 and 60 years, there being 93 such cases. This is partly explained by the fact that many non-febrile diseases tend to occur or to progress at this period of life, such as chronic myocardial diseases, chronic nephritis, hyperpiesis and cerebral vascular lesions. The next highest number occurred between 30 and 40 years, as there were 85 cases, and it is interesting to note that in the decade from 20 to 30 years there were 60 cases, and between 60 to 70 years there were 61 cases. In many of the younger patients the period of subnormal temperature was very short, such as the fall after pyrexia in lobar pneumonia, and on the whole it was the elderly patients who ran very low temperatures for long periods.

DEATHS/

DEATHS in RELATION to SUBNORMAL TEMPERATURE.

On the surface it seems logical that the temperature should fall to subnormal before death, but actually the opposite is the case. There is a strong tendency for the temperature to rise before death, either to normal or even to fever height.

There were 135 deaths in all, 91 in the control group and 44 in the subnormal group. The percentages for the two groups are 10·8% of the total in the control group, and 10·06% in the subnormal, so that the death-rate was almost identical.

In the control group 60 cases died in high pyrexia, 16 with slight pyrexia, and 15 with normal temperatures. In the subnormal group there were 12 deaths in high pyrexia, 13 in slight pyrexia, 11 with normal temperatures, and 8 with subnormal temperatures. The greatest number of deaths occurred with temperatures of between 97 and 98, as there were 23 in the control group and 5 in the subnormal, making 28 in all. There were 24 deaths with temperatures of between 98 and 99, 17 in the control group and 7 in/

in the subnormal.

Only 11 cases showed a terminal fall to subnormal levels before death, and only 8 actually died with subnormal temperatures, as in three there was a rise in the last temperature. One case of meningococcal meningitis and hydro cephalus died with a temperature of 93·8, and one of gastric carcinoma with a temperature of 94, while 6 died with temperatures of between 95 and 96. They comprise one case of lobar pneumonia and alcoholism, one of bronchiectasis and cerebral abscess, one of disseminated sclerosis, oen of carcinoma of the colon, one of acute nephritis and one of chronic nephritis. With a series of such widely differing diseases it is not possible to find a factor which will explain a terminal fall in each case.

MALIGNANT/

MALIGNANT DISEASE.

Malignancy is a condition in which a low temperature might be expected to accompany the cachectic state, but this was not so.

In the control group there were 40 cases of malignant disease, or 4·1% of the whole group. In the subnormal group there were 17 cases, or 3·9%, again very similar figures.

Practically all the cases of tumour of the lung or mediastinum were febrile, and a number of cases of gastric carcinoma, also of lymph-adenoma. The lowest subnormal temperatures were in some cases of gastric carcinoma, and in one of carcinoma of the colon, in all of whom there was deficiency in the intake of food. Very few cases had a persistently low temperature, and many of the subnormal group were febrile for part of the time.

Evidently malignancy does not of itself cause a subnormal temperature, and fever from associated sepsis is at least as common. A low temperature was observed especially in cases with semi-starvation.

TUBERCULOSIS/

TUBERCULOSIS.

Tuberculosis is another wasting disease in which a subnormal temperature is the exception rather than the rule. Only in the cases of chronic pulmonary tuberculosis was there a characteristically low temperature, as is shown in several of the charts. A high swinging temperature is otherwise more common than a low one. Even in disease of the bones and joints, a low temperature occurred only in three cases of spinal caries with pressure on the cord, and the subnormal course might be attributed entirely to the resulting spastic paralysis.

HAEMORRHAGE/

HAEMORRHAGE.

The peculiar fact that the temperature keeps up during haemorrhage has already been referred to several times. In every case but one of haemorrhage watched in the ward, the temperature was at least normal and frequently above normal until bleeding was stopped, and in the one exception there was also myocarditis and heart failure. This observation may not be true of sudden severe haemorrhage in cases of accident or surgical emergencies, or in the rapid loss of blood in post-partum haemorrhage, but it is true of the severe forms of haemorrhage occurring in medical cases. It is interesting to note that of the 11 cases who died of haemorrhage, 9 were in the control group, and 2 in the subnormal, and one of them died in high pyrexia.

The explanation is that the nervous mechanism is stimulated to prevent loss of body heat, and the skin vessels are contracted, so that the skin is cold and white, and the peripheral circulation is cut down to a minimum. Thus the internal temperature is maintained at a normal level or a little higher. Probably the same is true in severe anaemia, and the loss of body heat is prevented by a contraction/

contraction of skin vessels. At the same time, the patient is debilitated and susceptible to slight degrees of infection, and may therefore be slightly febrile at times.

D I S C U S S I O N.

That subnormal temperatures occur frequently in illness and convalescence is an incontrovertible fact; It is equally certain that a subnormal temperature is an abnormal temperature, and as sure an indication as fever of an impairment in the balance of heat regulation.

The fundamental processes underlying subnormal temperature are either deficient heat production or excessive heat loss. According to McDowall, a low temperature is usually the result of diminished heat production, and he cites myxoedema as a disease illustrative of low temperature caused by low basal metabolism. Unfortunately in this series there were no cases of myxoedema; but in many of the other diseases under observation there can be no doubt that deficient heat formation was the essential cause of subnormal temperature.

A sufficient food supply is necessary for maintaining the body temperature at a constant level, and in many cases of semi-starvation the temperature was abnormally low. The cases of bulbar palsy, who had had difficulty in swallowing for/

for many weeks, were among the most striking examples, but the same persistent low temperature was also observed in oesophageal obstruction, and in pyloric stenosis. Practically all cases on rectal feeding had a subnormal temperature until food was given by mouth. One case of gastro-colic fistula, who was losing nourishment by passing the food straight from the stomach into the colon, had a subnormal temperature throughout. In cases of ulcer with vomiting, pain and restricted diet, the temperature was often subnormal for long periods, and more so in duodenal than in gastric ulcer.

In diabetes mellitus there was a very marked tendency to a prolonged period of subnormal temperature. This might be attributed to the actual disease, with its characteristic wasting and loss of food material in the form of sugar in the urine. But on studying the charts it appears more probable that the low temperature is really the result of insufficient food. Every patient but one was admitted with a temperature of normal or higher. The one exception had been kept on a low diet for some time before admission, and his temperature rose on the increased fare allowed in the ward. Three cases admitted in coma were febrile,

so/

so that the greatest disturbance of metabolism was accompanied by pyrexia, and not by a fall. On the other hand, falls to subnormal were frequently noted during the first week of dieting, when the routine allowance was 1500 calories per day; and an even more significant fact was that the temperature did not return to normal when the diet was increased up to 2800 calories, though glycosuria was controlled and sufficient insulin was given to cover the diet. This suggests that the diets in general use, though ample for some, are insufficient for other individuals, and that the dieting should be regulated by individual requirements rather than by routine.

The muscles are the principal source of heat formation; and if the muscles are severed from their connection with the central nervous system, they become atrophied, and the individual reacts like a cold-blooded animal. In no disease are all the muscles severed from their connection with the nervous system; but in certain conditions there is a widespread interference in the connection between the muscles and the central nervous system, and in many such cases there was a very marked/

marked subnormal temperature. The most striking were cases of progressive muscular atrophy, peripheral neuritis affecting the motor nerves, and myasthenia gravis. A subnormal temperature may very probably occur in severe cases of infantile paralysis, but in this series they were so mild that the surviving muscles were ample to provide for heat production. Strangely enough a subnormal temperature was rare in pseudo-hypertrophic muscular dystrophy.

Probably in pulmonary tuberculosis the subnormal temperature is in part due to muscular inefficiency in heat formation. Loss of weight is an essential feature in phthisis, and an examination of a patient shows at once that this is not only from loss of fat, but from wasting of muscle substance. The small atonic muscles are well known in active tuberculosis, and cannot be a satisfactory source of heat production, any more than they are capable of strenuous work.

The efficiency of the muscles is dependent on their blood supply as well as on their nerve supply. With a failing circulation there may well be failure of heat production, and this is corroborated by the occurrence of a persistent subnormal temperature in cases of heart failure, chronic/

chronic myocarditis, and auricular fibrillation. It also explains why a subnormal temperature in these diseases is a grave sign in prognosis. The greater the failure of the central circulation, the less good is the peripheral blood supply, and the poorer the supply of body heat.

The same factor probably operates in producing subnormal temperature in arterio-sclerosis, hyperpiesis, and chronic nephritis. Apparently the degree of nitrogenous retention does not cause a fall of temperature, as the cases of uraemic coma were febrile; but chronic nephritis does not exist alone. Sooner or later arterio-sclerosis, high blood pressure, and heart failure take a part in the course of the disease, and in such cases there is a slow steady fall to subnormal levels.

Shock may be another cause of diminished heat production. The most striking examples were the cases of cerebral haemorrhage and thrombosis, in whom the fall reached to dangerously low levels. At the moment of shock the heat-regulating mechanism is thrown out of action, so that probably there is also increased heat loss; but in addition there is muscular relaxation and weakness of the heart, so/

so that heat formation is in abeyance. With partial recovery the controlling mechanism again comes into play, the skin vessels contract and prevent loss of heat, and the result is a rapid rise of temperature to normal or a little higher. Later there is a long period of subnormal, which is probably due to lack of heat formation in the paralysed muscles.

Pain, which frequently causes a fall of temperature, may act by producing shock, in which case both diminished heat formation and increased heat loss are responsible for the low temperature.

The falls to subnormal in cases of neurosis may in part at least be attributed to deficient heat production. The neurasthenic patient is depressed and tends to sit or lie brooding on his troubles, and avoiding exertion. He is unduly tired by exercise, and therefore regards it as an evil to be shunned. Sleepless nights increase his mental depression and physical lassitude; and the muscles become more and more out of tone and incapable of vigorous contraction. As the mental anxiety is relieved there is a corresponding recovery of bodily vigour, the muscles improve in tone/

tone and contract more briskly, and the temperature rises to a higher level. It is worth noting that the temperatures of these who did not improve mentally and physically did not become normal in hospital.

With regard to increased heat loss McDowall gives as common causes alcoholism and chronic moist conditions of the skin. It may also occur in some other conditions.

In fever the heat-regulating mechanism is at first in abeyance, but as the temperature rises the skin mechanisms come into action. The skin becomes dry and hot from dilatation of the capillaries, and later there is an out-pouring of sweat so that the temperature falls. This happens at the crisis in pneumonia, and in swinging temperatures between the periods of high fever. Sometimes this fall goes too far, and the temperature falls beyond normal to subnormal. This was seen in a number of cases of lobar pneumonia, in which there was a fall to subnormal after the crisis. The fall was usually of short duration, lasting for about 24 hours, and was not very low; but in some cases, especially in bronchopneumonia and pleurisy, the fall lasted for many days before heat production balanced heat loss. In one case of/

of rheumatic fever the fall was extreme, even dangerously low. Similar falls occurred in two other cases of rheumatic fever, in malaria, and in a few cases of cystitis. Such cases probably require extra care and warmth at the time of the fall, and it may be wise to keep them in bed longer than is the usual custom.

The night sweats of pulmonary tuberculosis are probably important factors in producing the well-known subnormal morning temperature.

During active haemorrhage the body makes an effort to conserve its heat. The cutaneous vessels are contracted, and the skin is cold and white, but the internal body temperature is maintained at a relatively high level. After haemorrhage is over the protective mechanism is relaxed, and there may be a fall to subnormal, though not invariably.

The same is probably the case in severe anaemia, when in spite of pallor and coldness of the skin the temperature is normal more often than subnormal. At the same time the patient's resistance is low, and he is susceptible to low grade infections, so that slight or severe pyrexia is more/

more characteristic of anaemia than a subnormal temperature.

This mechanism probably accounts for the terminal rise of temperature before death. There is a last effort to preserve body heat, the skin becomes white and cold, and the temperature rises even to moderate pyrexia. Another possibility is that with lowered resistance the patient falls a victim to a terminal infection, which raises the temperature; and this may be true of cases who die with a sudden rise to high fever.

The occasional falls during convalescence are due to either of the causes of low temperature. Probably fatigue causes diminished heat production, while purgation from strong aperients causes excessive heat loss. Both these factors may be considered with advantage in the handling of convalescents.

C O N C L U S I O N S.

I. A study of the temperature chart in cases of low temperature may be helpful in diagnosis, prognosis and treatment.

II. A very low temperature with a big daily variation was noted in cases of chronic pulmonary tuberculosis and in bronchiectasis, but in no other disease. Such a chart may well be of assistance in diagnosis.

III. The presence of a persistently subnormal temperature in chronic myocardial disease, chronic nephritis, arterio-sclerosis and hyperpiesis is of grave prognostic significance.

IV. The shock of intra-cranial vascular lesions is associated with an extreme fall of temperature. A similar though less marked fall may occur in shock from pain or in collapse.

V./

V. Any condition which diminishes the intake of food leads to a fall in temperature. In any such case a subnormal temperature is an indication that more nourishment is required.

VI. A subnormal temperature in diseases with muscular wasting is a sign that external warmth is necessary.

VII. In cases of chronic heart disease a subnormal temperature indicates the need for a long period of rest, and in cases with a fall to subnormal after getting up, a further period of rest may be advisable.

VIII. After pyrexia or haemorrhage there may be a fall to subnormal from excessive heat loss, Such cases need careful watching and application of external warmth.

IX. Care is required in the management of convalescents whose temperatures is unstable as falls to subnormal are signs of some disturbance. In particular there/

there should be supervision of the administration of aperients and fatigue should be avoided.

My thanks are due to Professor Bramwell for much helpful advice and to the Ward staff for their cooperation.

CASE RECORDS.

The following case records are given in brief, together with copies of their temperature charts. They are fair representative examples of the 437 cases who had subnormal temperatures, and illustrate all the points raised in the discussion.

CASE 1.

No. 6480. Age 27.

DIAGNOSIS Lobar Pneumonia. Recovered.

ADMITTED February 13th, 1930.

DISCHARGED March 12th, 1930.

The patient was admitted on the second day of illness, after having had a rigor the previous day, and with a typical right-sided lobar pneumonia. The crisis occurred on the 10th. day, and convalescence was uneventful.

The TEMPERATURE on admission was 101·8, and remained high until the 10th. day, with a pulse-rate of 90 to 100. After the crisis the temperature fell to 97·6 with a pulse of 86 on the 11th. morning, respirations 20. On the 12th. morning there was a further fall of temperature to 96, the pulse was 72, and respirations 24. The temperature remained subnormal all day, and was 96·2 at/

at night with a pulse of 56, respirations 24. After this the temperature rose to 97 with a very slow pulse, between 40 and 60. He got up on the 18th. day, and had an aloin pill on the 19th. without ill effect; but on the 24th. morning there was a fall of temperature to 96 with a rise of pulse 76. The case history gives no clue to the cause of this upset of temperature.

CASE 2.

No. 6582. Age 37.

DIAGNOSIS Lobar Pneumonia. Recovered.

ADMITTED March 27th. 1930.

DISCHARGED April 28th. 1930.

The patient was admitted with a history of a rigor 4 days previously, pain in the right side, cough and rusty sputum. The whole of the right lung was consolidated. He was given 7 injections of anti-pneumococcal serum, twice a day for 3 days, and then daily for 4 days. The last was given on the 9th. day of illness, just after the crisis. Dullness and bronchial breathing persisted for a fortnight longer, but aspiration proved there was no fluid or pus. Improvement

was/

was gradual.

The TEMPERATURE on admission was 101 with a pulse of 116, and respirations 36. Pyrexia was not very high, and the crisis occurred on the 9th. morning. The temperature was then 98, the pulse 92, and respirations 28. On the 10th. day the temperature remained at 98·4, and the following day between 97·4 and 98. On the 12th. evening there was a fall to 96, with a pulse of 84, and respirations 28. Convalescence was remarkable for frequent falls of temperature to 96, 95 and even 94 in the mornings. Six falls occurred after an aloin pill, and one after getting up. The fall to 94 occurred on the second day after getting up and after a purgative, as if the two combined had had an extra severe effect on the temperature. Between falls the temperature was trying to settle at about 97, and did so settle in the 5th. week, when a purgative pill had no effect on the temperature.

CASE 3.

No. 8165. Age 41.

DIAGNOSIS Lobar Pneumonia. Recovered.

ADMITTED May 19th. 1932.

DISCHARGED June 9th. 1932.

The patient gave a history of being "out of sorts" for 3 days; then he had a shiver and abdominal pain 2 days before admission. He was admitted on the 3rd. day of illness with consolidation at the left base and a pleuritic rub. He was not very ill, and there was no crisis. Convalescence was uneventful.

The TEMPERATURE on admission was 101·8, pulse 98, and respirations 30. The temperature fell by lysis, with a gradual fall of pulse-rate to 74. On the 8th. morning the temperature was 99 and the pulse 76; in the evening there was a fall to 95, pulse 70 - a fall of 4 degrees in 12 hours, without the usual phenomena of a crisis. During convalescence the temperature was regular between 97 and 98, and was not disturbed by aperients or getting up.

CASE 4.

No. 6622. Age 36.

DIAGNOSIS Bronchopneumonia. Recovered.

ADMITTED April 13th. 1930.

DISCHARGED May 5th. 1930.

The patient had been ill for 5 days with pain in the chest, cough and sputum. He was very ill and dyspnoeic, with dullness and bronchial breathing in the right infra-scapular region. The chest cleared in 5 days, and there was no crisis. Convalescence was uneventful.

The TEMPERATURE on admission was 101, with pulse-rate of 108, and respirations 36. The temperature fell by lysis to 98 on the 5th. evening when the pulse was 100 and respirations 22. The lysis continued to 96·4 on the 8th. evening, and fell to 95 on the 10th. morning. For 3 days the temperature remained between 95 and 96, except for a fall to 94·6 after an aloin pill, and rose again to 97 on the 12th. evening, the day the patient first got up. Next morning the temperature was down to 96, and remained subnormal for 5 more days. In the third week it rose again, and finally settled round about 97.

CASE 5.

No. 6621. Age 36.

DIAGNOSIS Dry pleurisy. Recovered.

ADMITTED April 13th. 1930.

DISCHARGED April 23rd. 1930.

The patient had been ill at home for 8 weeks, with pain in the chest, fever, cough, and loss of weight. On admission he was not in much pain, and the signs were indicative of thickened pleura. There was no effusion. He made a rapid recovery, and was discharged well on the 11th. day.

The TEMPERATURE. Before admission the patient had had high fever, and was admitted at the end of the febrile stage. For the first 5 days the temperature was round about 98, with a rise to 99·8 on the second evening. On the 5th. morning there was a fall to 96, followed by an evening rise to 99. Next day it fell to 97, and the day after to 96; and from this time until discharge it remained subnormal, except for 97 on the evening of first getting up.

CASE 6.

No. 8583. Age 22.

DIAGNOSIS Influenza. Recovered.

ADMITTED December 4th, 1932.

DISHARGED December 14th, 1932.

The patient had been feeling poorly for a day or two with his "head going round", then he felt shivery with a severe headache, and pain in the chest and abdomen. After admission he had a severe backache, and evidently had a typical attack of influenza. He made a good recovery.

The TEMPERATURE was 101·2 on admission with a pulse of 116. The temperature fell by lysis to 97·4 on the 4th evening, when the pulse was 80. The lysis continued to 96 on the 6th evening, and 95·6 on the 7th morning, when the pulse-rate fell to 64. After this the temperature rose steadily, to round about 97 on the last 2 days. It was not affected by getting up.

CASE 7.

No. 6503. Age 26.

DIAGNOSIS Bronchiectasis. Much improved.

ADMITTED February 22nd, 1930.

DISCHARGED March 23rd, 1930.

The patient gave a history of pleurisy with effusion 12 years before, after which he spent 6 months in a sanatorium. He had had a persistent cough with foul greenish sputum ever since, and 5 months before admission he had a fairly severe haemoptysis. There were signs of bronchiectasis in the right lung, and no evidence of tuberculosis. Bronchoscopy was performed with beneficial results, and he was also given creosote, iodoform and carbolic acid by mouth. On discharge after a month in hospital he was much improved.

The TEMPERATURE was 97.2 on admission, and remained about 97 for 3 days while he was in bed. On the 4th morning there was a sudden fall to 95, for no obvious cause. On that day he was X-rayed, got up, and had an aloin pill at night, and the evening temperature was 99 --- a swing of 4 degrees in 12 hours. For the next 3 days the temperature was decidedly swinging, from about 96.4 in the mornings to 99 at night. On the/

the 8th day it came down to 97 in the morning, and 96 at night; and to 95 on the 9th morning. After this it became fairly settled for a week, between 97 and 98; but in the 3rd week it was twice 96 and once 95 in the morning. After bronchoscopy on the 18th day there was an evening rise to 98·6, followed by several days of irregular temperature, varying between 96 and 98·4. In the 4th week there was a sudden rise to 101·8, which fell by lysis to 95 in 5 days. During the last two days the temperature continued swinging between 95 and 98·6. On looking at the chart the falls of temperature to subnormal are more erratic and remarkable than the rises above normal, and are more striking evidence of the instability of the regulating mechanism.

CASE 8.

No. 6610. Age 38.

DIAGNOSIS Bronchiectasis. Improved.

ADMITTED April 28th, 1930.

DISCHARGED May 14th, 1930.

The patient gave a history of having inhaled a foreign body at 5 years of age. 3 years later he developed a cough with abundant foul sputum, which had continued daily ever since. At 13 years a thoracoplasty had been done, without much benefit. On admission there was some dysponea clubbing of the fingers, and flattening of the left side of the chest, where the operation scar was present. An X-ray did not show any foreign body, but a lipiodal and X-ray examination showed multiple bronchiectatic cavities in the left lung. Bronchoscopy was performed and a quantity of foul sputum was removed. Creosote was given by mouth, and the general condition was improved.

The TEMPERATURE was markedly swinging or hectic throughout, and was not settled on discharge, in spite of the clinical improvement. During the first week it was a swinging subnormal, from 96 to 98 or 98•4, with two morning temperatures of 95. The lipiodal examination was made

on/

on the 9th day, after a morning temperature of 96. That night it was 100, and next morning 95. During the day it rose to 101·2 at night, a rise of over 6 degrees in 12 hours. Next evening the temperature was 101, after which it fell to 95 2 mornings later. Until discharge it continued irregular, but rising higher with slight pyrexia at night. This chart shows a very great daily variation in the temperature even when below normal; and is also an example of pyrexia combined with subnormal temperature.

CASE 9.

No. 6615. Age 70.

DIAGNOSIS Chronic Bronchitis and Emphysema. Improved.

ADMITTED April 10th, 1930.

DISCHARGED April 28th, 1930.

There was a ten years' history of loose cough with sputum, severe for a fortnight. The patient was a frail old man, an alcoholic, and very distressed and ill. There was some dulness at the right base, otherwise the lungs were hyper-resonant, with moist sounds in all areas. There was copious frothy/

frothy sputum. He was treated with rest, expectorants, and digitalis, and improved considerably.

The TEMPERATURE on admission was 99•4, and was inclined to rise slightly at night. On the 4th morning it was 96 after a dose of licorice, followed by 99 at night, a rise of three degrees in 12 hours. On the 6th morning there was a fall to 95•6; after which the temperature ran a very subnormal course, seldom reaching 97. The lowest fall was to 94•4 on the 13th morning. This chart is a good example of an irregular subnormal temperature; with no regular daily variation, but a tendency to rise and fall between subnormal limits.

CASE 10.

No. 6548. Age 41.

DIAGNOSIS Chronic Bronchitis. Not Improved.

ADMITTED March 13th, 1930.

DISCHARGED March 26th, 1930.

The patient was gassed in 1918, and had had a cough and sputum ever since. For 3 weeks he had been much worse, with pain in the chest, and increase of cough and sputum. On admission he was very ill and cyanosed. The physical signs were those/

those of chronic bronchitis, but the X-ray was suggestive of tuberculous infiltration, the sputum was negative for tubercle bacilli, however. In the absence of confirmatory evidence, the diagnosis of pulmonary tuberculosis was not made, and the case was treated as one of chronic bronchitis. There was little improvement in his condition before discharge.

The TEMPERATURE was a hectic sub-normal throughout, swinging between 94 and 98 or 98·4. It was a most unusual one. In most cases of chronic bronchitis, there is a tendency to slight pyrexia, and the temperature runs about 98 to 99, though there are exceptions. In pulmonary tuberculosis at the non-febrile stage and in bronchiectasis there may be a very swinging sub-normal temperature, and this chart suggests that the patient was indeed tuberculous. The clinical findings were suspicious but not conclusive; and possibly the temperature record might be accepted as additional evidence in a doubtful case.

CASE 11.

No. 6580. Age 65.

DIAGNOSIS Fibroid Phthisis. Improved.

ADMITTED March 24th. 1930.

DISCHARGED April 13th. 1930.

The patient had a long-standing history of cough with sputum, worse for one year, and much worse for 3 weeks, with difficult breathing and pain in the chest. There were signs of active disease at the left apex, and the X-ray showed wide spread fibroid phthisis throughout the left lung. The sputum was negative. He remained in the ward for 3 weeks, and all acute symptoms were soon relieved. On discharge he was improved.

THE TEMPERATURE is a good example of an irregular subnormal, often swinging and sometimes hectic. On admission there was slight pyrexia for 3 days, falling to normal on the 4th. day, and then to subnormal. It varied up and down from 95 to 98·4, the greatest swing being from 94 to 97·8 in 12 hours.

CASE 12.

No. 8582. Age 64.

DIAGNOSIS Pulmonary Tuberculosis, Haemoptysis. Transferred to a Sanatorium.

ADMITTED December 4th, 1932.

DISCHARGED December 24th, 1932.

For 4 years the patient had had symptoms suggestive of gastric ulcer; and on the day of admission he brought up some bright red blood. He had no cough or loss of weight. On admission he was not distressed or suffering from the haemorrhage. Next day he again brought up a quantity of red blood; and obviously it was from the lungs. There were signs of disease at the right apex, and crepitations throughout the whole right lung. The haemorrhage continued for two days, and the patient's condition was worse. For a few days the bleeding stopped, but there were two slight attacks in the 2nd week. Tubercle bacilli were not found, but he was sent to a sanatorium.

THE TEMPERATURE on admission after haemotysis was 97. On the 2nd and 3rd. days, during active haemorrhage, it remained between 97 and 98. On the 4th day it rose to 99 at night, and/

and then fell by degrees to 96·8 on the 7th evening. For the next 10 days there was slight pyrexia, the highest being 99·8 and during this period there were two slight haemoptyses. On the 12th day the temperature was low all day, being 96·2 in the morning, and 96 at night. For the remaining two days it varied between 96 and 98. This record shows how the temperature keeps up to normal or higher during haemorrhage, and may fall after haemorrhage is checked. The slight pyrexia may be attributed to the tuberculous condition; but it is striking that the temperature was normal before and after haemorrhage, and raised during haemorrhage.

CASE 13.

The charts of 4 cases undergoing sanetorium treatment are included here.

P.C. was a recent case, still at the febrile stage, but with intervals of very sub-normal temperature.

T.L. was a little more advanced with pyrexia only after minor disturbances. After one febrile attack the temperature fell by degrees to

95, but rose again to 100 after a chill. J.M. and J.L were cases of fibroid phthis and had very low and persistently subnormal temperatures. The former also had a tuberculous larynx.

CASE 14.

No. 6747 Age 57.

DIAGNOSIS Infective Endocarditis. Died. Cerebral Haemorrhage.

ADMITTED June 16th 1930

DIED July 10th 1930

Three months before the patient had a chill with rheumatic pains in his legs; he was ill for 5 days, and never felt really well afterwards For 7 weeks he had been worse with breathlessness and fever. On admission he was very ill, with high temperature, and murmurs in the mitral and aortic areas. At the end of the 3rd week he complained of a sudden headache, became unconscious, and died in 12 hours. At the post-mortem large haemorrhages were found in the left temporal and occipital regionds and ulcerative endocarditis of the mitral and aortic valves.

THE TEMPERATURE for the first three weeks was a swinging pyrexia, between 98 and 102. With the/

the onset of cerebral symptoms there was a sudden fall from 101.8 to 96 and then a rise to 97 which was the last recorded temperature before death. A four-hourly chart was kept, and the temperature was taken about two hours before death.

CASE 15.

No 7139 Age 65.

DIAGNOSIS Myocardial Insufficiency Improved.

ADMITTED 2nd. January 1931

DISCHARGED 14th January 1931.

The patient was brought in by the police who found him lying blue and unconscious in the street. He was a case of chronic encephalitis of 10 year's duration. He had been suffering from weakness and breathlessness for 6 weeks. He had been almost entirely in bed for this period, and suddenly went alone for a walk. He collapsed, and was brought into the Infirmary in a very critical state. The heart was dilated, the sounds were faint, and he was cyanosed dyspnoeic. He was treated with digitalis and sedatives, and rallied quickly. The heart became normal in size again/

again, and on discharge he was fairly well.

THE TEMPERATURE on admission was 96, a true "collapse" temperature. The pulse was 120. With improvement the temperature rose rapidly, to 97.6 on the first evening, and 100 on the second and the pulse rate fell to 98. From the 3rd. to the 9th day the temperature remained between 97 and 98·4 with two slight rises to 98·8. The patient got up on the 6th day, with no immediate effect on the temperature; but 3 days later the temperature began to fall, and reached 96 on the day of discharge. This lowering of temperature is a feature of myocardial weakness, and would probably have been more marked if the patient had remained langer in hospital.

CASE 16.

No 7254. Age 54

DIAGNOSIS Auricular Fibrillation.
Improved.

ADMITTED 2nd. January 1931.

DISCHARGED 10th March 1931.

Five years before the patient had an appendicular abscess, and his heart was affected. He was in bed for a year, and had never worked since./

since. On the day of admission he collapsed, though he was not unconscious and was brought in to the Infirmary cyanosed, dyspnoeic, with an enlarged heart and auricular fibrillation. He was kept in bed for 10 days, and kept on digitalis for 5 weeks; and his general condition improved very much, though the cardiac irregularity persisted.

THE TEMPERATURE on admission during collapse was 98·2. Next morning it fell to 96. For 5 days it remained about 96, and then fell to a continous 95 for another 5 days. On the 12th evening there was an unexplained rise to 97·6, but the temperature soon fell again to 95, though it was more irregular in type. In the 4th week it fell to 94 on 3 occasions, followed by a rise to 97.2. In the 5th week it became regular once more, first around 96 and later between 96 and 95. This is a typical chart of a case of myocardial insufficiency and is an example of regular subnormal temperature.

CASE 17.

No 7267 Age 57.

DIAGNOSIS Intermittent Claudication.
Improved.

ADMITTED 3rd. March 1931

DISCHARGED 19th March 1931.

For one month the patient had had cramping pains in his legs on walking, and for 2 weeks his right hand had been numb, white, and powerless. His vessels were thickaned, and his blood-pressure was 220/140. He was treated with rest in bed for 10 days, and iodides; and the blood-pressure fell to 175/130. On discharge the symptoms were much relieved.

THE TEMPERATURE was subnormal throughout. While the patient was in bed it was regular in type, between 96 and 97. After getting up, there was a bigger daily variation, and it frequently fell to 95. As the temperature fell, the pulse rose, from 72 on admission to 104 the night before discharge.

CASE 18

No 8273. Age 44.

DIAGNOSIS Myocarditis; Auricular Fibrillation. Died.

ADMITTED 14th July 1932.

DISCHARGED 22nd. July 1932.

Five months before the patient had had influenza, and since then he had been easily tired. He had had rheumatic fever 29 years previously and his heart had been affected. Recently he had been getting more and more breathless. On admission he was very ill, fibrillating and oedematous. He was put on infusion of Digitalis in moderate doses, but next day his condition was worse. On the 3rd day he was put on massive doses of digitalis and improved for 3 days. On the 7th day however, he became restless, confused, and almost unmanageable and on the 9th day he died very suddenly. At the post-mortem an old adherent pericarditis was found, with very enlarged heart.

THE TEMPERATURE on admission was 95. Next morning, when the patient was worse, it rose to 97·6, but fell again at night to 95. On the 3rd 4th,/

4th, and 5th days, when the patient was improving it remained around 95, sometimes at 94·8. It rose on the 5th evening to 96·4, and then began to swing rather higher. On the 7th day, when he was mentally confused, it was between 96 and 97; and similarly on the 8th day. On the 9th day it rose rapidly to 99·6, which was the last recorded temperature before death 4 hours later. It will be seen that as the patient improved the temperature fell; and as he relapsed it began to rise to normal levels, while before death there was slight pyrexia.

CASE 19.

No. 6568. Age 47.

DIAGNOSIS Peripheral neuritis.
Improved.

ADMITTED March 21st, 1930.

DISCHARGED April 3rd, 1930.

The patient had been twice before in the ward, suffering from peripheral neuritis of the legs. There was muscular weakness chiefly affecting the dorsi-flexors of the feet; and there was no pain. The ankle jerks were absent; and the knee jerks were difficult to elicit. He improved on Nux vomica; and on discharge there was only a slight drop foot.

The TEMPERATURE was markedly swinging, sometimes hectic, while the patient was in bed it varied between 94 and 98·2. The biggest variation was a drop from 98 on the 4th evening to 94 on the 5th morning, a fall of 4 degrees in 12 hours. After getting up the temperature remained about normal for 3 days, and then fell again to subnormal, with the same tendency to swing.

CASE 20.

No. 6635. Age 48.

DIAGNOSIS Anxiety Neurosis. Much Improved.

ADMITTED April 21st, 1930.

DISCHARGED May 5th, 1930.

For 4 months the patient had been run down. For 2 months he had fullness of the stomach, and eructations of wind two hours after meals. His heart had been missing beats for 5 weeks, and for two weeks he had had fluttering of the heart. On admission he was very worried about himself. He was a heavy smoker, and proved to be an air-swallower. A test meal and X-ray were done to convince him that his stomach was healthy, and he improved very much.

The TEMPERATURE was irregular throughout. On admission it was 98, and the second evening it was 99·2. For the next 6 days it remained at normal levels, but on the 9th morning there was a fall to 95 for no obvious cause, except possibly a dose of licorice the night before. Later doses had no such effect. In the evening there was a rise to 98, but after this it tended to run lower, and twice reached 96. This chart is an example/

example of the irregular temperatures occurring frequently in pure neurosis, with no organic cause whatever.

CASE 21.

No. 6509. Age 54.

DIAGNOSIS Traumatic Neurasthenia.
Recovered.

ADMITTED February 24th, 1930.

DISCHARGED March 16th, 1930.

Years before the patient had been in a slight motor accident, in which he was slightly hurt, and for which he **had to pay a large sum in damages. He had been in difficulties over the support of his family, and had become very worried and depressed. For six months he had queer feelings in his head, and blurring of vision.** On examination nothing organic was found, and his symptoms disappeared after two weeks behind screens.

The TEMPERATURE was an irregular subnormal throughout, often hectic, and ranging between 95 and 98. After he got up it was about 95 for two days, and was not up to normal on discharge.

CASE 22.

No. 7351. Age 57.

DIAGNOSIS Post-traumatic Headache.
Improved.

ADMITTED April 4th, 1931.

DISCHARGED May 13th, 1931.

The patient had had an injury to his head and shoulder 7 years before. He was dazed at the time, but not unconscious; and soon recovered. He kept well for 2 months, and then began having headaches at the back of his head, with occasional giddiness. The headaches had increased in severity and frequency; he had not worked for over a year; and was drawing full compensation. On admission he was anxious about himself, and was having almost constant headache. An X-ray showed no sign of fracture; there was a trace of albumin in the urine; and the blood-pressure was 190/126. On the 4th day he was put on Weir-Mitchell treatment, being isolated behind screens on milk diet. He was kept behind screens for a fortnight; and in the second week he improved very much, and the headache completely disappeared. He was allowed up the day after removing the screens, and continued well until discharge/

discharge.

The TEMPERATURE was a remarkably low one throughout, seldom reaching 97. On admission it was 97, but by evening it was 94. On the second day it was 95·2 in the morning, and 93·8 at night. On the 3rd day it remained about 95. On the 5th evening, after commencing isolation behind screens, it rose to 96·6, but fell again to 94 the next evening. During the first week behind screens it was regular between 94 and 95, and then rose to between 95 and 96·4. It still further tended to rise, and touched 97 once before removing the screens. After removal of the screens it remained between 96 and 97, except for one drop to 95 on the 2nd evening after getting up. This chart shows how low a temperature may fall and how continuously in a neurosis, and also illustrates the rise to normal levels of temperature with physical and mental improvement.

CASE 23.

No. 6682. Age 54.

DIAGNOSIS Melancholia. Not Improved.

ADMITTED May 13th, 1930.

DISCHARGED May 21st, 1930.

For over 4 months the patient had been depressed, worried and sleepless. On admission he was unhappy, and inclined to sit by himself in the ward and weep. He was improving on bromides; but refused to consider institutional treatment, and went home against advice.

The TEMPERATURE for the first 4 days was swinging in type, from 95 in the morning to 97 at night. During this period he was depressed and sleepless, but on the second day after starting bromide it rose to normal, and remained there except for one fall to 96 on the 6th morning. This chart illustrates the effect of sleeplessness on the temperature, as it became normal after sedatives; though the depression was not much improved.

CASE 24.

No. 6651. Age 42.

DIAGNOSIS Jacksonian Epilepsy.
Improved.

ADMITTED April 28th, 1930.

DISCHARGED May 29th, 1930.

The patient gave a history of weakness and numbness in the left leg for one year. 3 weeks before admission he was seized with a stabbing pain in the left shoulder, he fell forwards, and had spasmodic movements of the left hand and arm. There was a second similar attack a fortnight later, and since then the weakness of the leg had increased. On admission physical examination and X-ray were negative; the Wassermann reaction was weak positive, but negative after a provocative injection of Neo-Kharsivan. He was put on iodides, and the weakness improved considerably. There were no "turns" while he was in the ward.

The TEMPERATURE was a regular normal one, being 97 to 98 for the most part. The only striking thing was a fall to 95 one morning after wakening at 4 a.m. This bears out the suggestion that want of sleep is a cause of low temperature. It was 96 the next morning after an aperient.

CASE 25.

No. 6500 Age 48

DIAGNOSIS Ataxic Paraplegia. Not improved
ADMITTED Feb.21st 1930.

DISCHARGED March 12th 1930

The patient gave a history of weakness and unsteadiness for one year. On admission both legs were spastic, the right more so than the left. He was treated with iodides, but there was no improvement in spasticity.

THE TEMPERATURE was an irregular one, with marked falls to subnormal after some exciting cause. On admission it was 97·6 and for the first 4 days it was between 96.4 and 98. On the 4th afternoon lumbar puncture was performed and next morning the temperature fell to 95. At night is was 97. That afternoon the patient got up, and next morning the temperature was again 95, and 94·6 the morning after that. It rose that night to 98, and began to settle around 97, until a fall to 95 of the 11th morning after an aloin pill. For the next 3 days it remained at the upper levels of normal once reaching 99; until it fell to 97 after another aloin pill/

pill. Then it became more settled about 97, with two morning drops to 96.

CASE 26

No 6751 Age 38.

DIAGNOSIS Disseminated Sclerosis.
Died.

ADMITTED June 17th 1930

DIED July 13th 1930.

Six months previously the patient started having pains in the left thigh, and was in bed for two months. On getting up he felt his legs weak and stiff, and this had been getting worse. On admission he had typical signs of disseminated sclerosis; and shortly afterwards he had double vision. In the 4th week in hospital he developed incontinence of urine and faeces, and an acute ascending kidney infection followed. The urine was full of pus, and in spite of treatment with hexamine, he got rapidly worse and died.

THE TEMPERATURE during the first 3 weeks was a regular normal one, between 97 and 98. In the 4th week there was high pyrexia of 101 or 102. In the 5th week it ran a little lower, and similarly in/

in the 6th week. In the 7th it fell to normal with only occasional evening pyrexia. And in the 8th there was a steady fall to subnormal, and death occurred with a temperature of 95•2 This was one of the few cases in which there was a fall of temperature before death; and a fall after a febrile condition was most unusual.

CASE 27.

No. 6645. Age 71

DIAGNOSIS Cerebral Haemorrhage.
Hypostatic Pneumonia
Died.

ADMITTED April 24th 1930.

DIED May 3rd 1930

The patient was taken ill suddenly while at his tea. There was aphasia and right-sided haemiplegia; he was semi-conscious, and in two hours became deeply unconscious. He was admitted in this condition. There was blood in the cerebro-spinal fluid, and all the usual signs of cerebral haemorrhage. Next day he became conscious, though still aphasic. On the 3rd day he was a little better; but on the 4th there were signs of commencing respiratory complications, with crepitations at both/

both bases. Three days later he suddenly became unconscious, and the following day there were definite signs of hypostatic pneumonia. 24 hours later he died. At post mortem large cerebral haemorrhage was found also hypostatic pneumonia of both lungs.

THE TEMPERATURE was 97·6 when the patient was admitted unconscious. Next morning it was 100 and 99·6 at night. On the 3rd. day it remained at 97, and rose only to 98·8 with the onset of respiratory symptoms. For two more days it remained about normal; but on the 7th day with the onset of unconsciousness, there was a fall from 98·4 to 95, or over 3 degrees in 12 hours. After this there was a steady rise to 100·2 on the 9th day when the patient died. This chart is interesting, as it illustrates the effects of two conditions. The rise of temperature after cerebral haemorrhage is shown twice over, but the initial fall after haemorrhage was over before admission, though it is clearly shown the second time. The effect of the pneumonia is more difficult to determine; it had little influence on the temperature at the onset, but may have been a contributary factor to the terminal rise.

CASE 28

No. 7280 Age 65.

DIAGNOSIS Cerebral Thrombosis.
Slightly improved.

ADMITTED March 12th 1931.

DISCHARGED April 1st 1931.

The patient was subject to anginal attacks which were relieved with amyl nitrite. On the morning of admission he collapsed and became unconscious suddenly. He was found to have a left-sided hemiplegia and left hemianopia. For 24 hours he was deeply unconscious, then became gradually conscious but drowsy. He improved mentally but was never normal, and there was no improvement in the hemiplegia.

THE TEMPERATURE on admission was 93.2 a striking example of the fall produced by cerebral thrombosis. Next day, when the patient was becoming conscious, it began to rise, and reached 99·4 on the 3rd evening. This rise after thrombosis was also characteristic. After this the temperature was very irregular, with swings of 3 or/

or 4 degrees spread over 2 or 3 days. After lumbar puncture there was a drop from 99 to 94.2 nearly 5 degrees in 12 hours. The temperature tended to rise by swings to normal levels as the patient improved.

CASE 29

No. 6515. Age 62.

DIAGNOSIS Cerebral Thrombosis.
Improved.

ADMITTED February 27th 1930.

DISCHARGED March 19th 1930

There was a history of headache for two days, with aphasia coming on gradually, also right hemianopia, and right-sided hemiplegia. On admission the patient was semi-conscious, and completely aphasic. The blood pressure was 120/84. While in hospital the hemiplegia improved a little, but there was no recovery of speech.

THE TEMPERATURE on admission was 94, typical of recent thrombosis. By evening it was 97·4 and continued to rise to 100 on the 3rd evening/

evening. After this it fell gradually for 3 days to 96, and then for 8 days it remained about 96, becoming more and more settled at 96. In the 3rd week there was an unexplained fall to 94 for two mornings, followed by a sudden rise to 97 for 24 hours. Again it fell to a very low level, being 94 for 3 mornings before discharge.

CASE 30

No. 6593. Age 49.

DIAGNOSIS	Cerebral Tumour (Post-operative) Worse.
ADMITTED	March 29th 1930
DISCHARGED	April 24th 1930

The patient had previously been in the ward for diagnosis, and had run a normal temperature. At operation a large tumour in the left thalamic region was found, bulging into the lateral ventricle. A parietal decompression was done, and a right-sided hemiplegia developed. On re-admission to the medical ward he was drowsy and confused; speech was difficult; there was astereognosis; the right eye was quite blind, and vision in the left eye was very poor. There was a large cerebral hernia/

hernia, and slight papilloedema. There was no improvement during his stay in the ward; if anything he was worse.

THE TEMPERATURE was normal before operation. On re-admission it was 98·4, and remained between 97 and 98.4 for 5 days. On the 6th morning there was a sudden drop to 95; and after this the temperature became more swinging, with increasing daily variations, and falling to lower levels. In the second week it varied between 96 and 98; in the 3rd. it reached 95, and began to run between 96 and 97. In the 4th week there was a further fall to 94, and the temperature ran between 95 and 96. This chart shows the effect of increasing intra-cranial pressure.

CASE 31

No. 7047. Age 13.

DIAGNOSIS Meningococcal Meningitis.
Hydrocephalus.
Died

ADMITTED November 14th 1930

DIED March 3rd 1931.

Five weeks earlier the boy had had a febrile attack, with neck rigidity, diplopia, and unconsciousness/

unconsciousness. He made a partial recovery, but had become worse during the last 24 hours. On admission he was delirious, with nuchal rigidity and Kernig's sign. The cerebro-spinal fluid was under pressure, with 700 cells per cmm. but no organisms were found. Repeated lumbar puncture gave little relief; but after 3 months there was some improvement. In the 4th month, however, he relapsed; and in the 19th week he commenced having convulsions, and died 4 days later. At the post-mortem an old basal meningitis was found, and internal hydrocephalus.

THE TEMPERATURE varied according to the stage of illness. Only the last three weeks are shown here, being the most interesting with regard to low temperatures. During the first 3 weeks there was variable pyrexia between 97 and 102 coming down in the 4th week to irregular subnormal between 96 and 98. In the 5th week it settled to regular normal, from 97 to 98 rising in the 6th to between 98 and 100. After two weeks of slight pyrexia, there was a fall in the 8th week to subnormal from 96 to 97. From the 9th. to the 16th weeks the temperature was a regular, normal one constantly between/

between 97 and 98. In the 17th week it became markedly irregular, varying between 95·6 and 98 and for two days there was a slight rise above normal, followed by a gradual fall to subnormal again. With the occurrence of convulsions in the 19th week there was an immediate fall to 95, followed by a rise next evening to 98 but after this there was a steady fall, reaching 93·8 three days later, at which temperature death occurred. This was one of the few cases in which there was a fall of temperature before death, and one of the very few that died with a subnormal temperature. It also illustrates how increasing intra-cranial disease, --- in this case increasing hydrocephalus --- brings about a fall of temperature to very low levels.

CASE 32

No. 7324 Age 63.

DIAGNOSIS Pseudo-Bulbar Palsy.
Not improved.

ADMITTED April 13th 1931

DISCHARGED April 23rd. 1931.

For several months the patient had been feeling/

feeling weak and out of health. The onset was gradual. A month before admission he vomited suddenly, and found he could not speak clearly, as his tongue felt stiff. He began to have difficulty in smoking and swallowing. On admission the palate moved well, but he could not blow out his cheeks. He was treated with strychnine by mouth, and the swallowing improved, but not the speech. His general condition improved a little.

THE TEMPERATURE was strikingly low throughout. On the day of admission it was above 97; but after this it only once touched 97. There was a steady fall at first; reaching 94·2 on the 3rd morning. Next morning it rose to 96, but by night it was again 94, and remained about 94 for several days, the lowest record being 93·6 on the night after lumbar puncture. After this it rose by swings to a regular 96 during the 2nd week, but in the 3rd there was a fall as low as 94·4 for 24 hours, followed by a rise almost up to 97 before discharge. The rise during the improvement suggests that the low temperature was in part due to want of food, as there can have been no real change in the intra-cranial disease.

CASE 33.

No. 6519. Age 26.

DIAGNOSIS Hyperchlorhydria. Much Improved.

ADMITTED February 28th, 1930.

DISCHARGED March 17th, 1930.

Fourteen months before the patient had had gastritis, and had never been well since. There was pain in the lower abdomen, but no abnormality could be detected. A test meal was done and the acid was high, so alkalies were given with great benefit. On discharge in the 3rd week all the symptoms were relieved.

The TEMPERATURE was a somewhat variable one. For the first week it was a regular normal one at 97; slightly more irregular in the second, between 96·4 and 98. The patient got up on the 7th day, and two days later the morning temperature was 96. In the evening it was 95, and remained between 95 and 96 for 5 more days. On the morning before discharge it fell to 94, but rose to 97 at night, and the same the next morning. This case shows a fall lasting for several days after getting up, and the first fall to 95 was in the evening, suggesting that fatigue was a factor in bringing down the temperature.

CASE 34.

No. 6600. Age 27.

DIAGNOSIS Constipation. Much Improved.

ADMITTED April 3rd, 1930.

DISCHARGED April 16th, 1930.

For 12 years the patient had been troubled with increasing constipation. He now had a constant dull headache, was passing hard dry stools, and was worried about himself. He was given liquid extract of cascara mxxx. every night, with occasional stronger purgatives; the diet was regulated; and he was encouraged about himself. He improved very much, and went out cheerful.

The TEMPERATURE was a swinging one during the first week, varying between 95 and 98. In the second week, as the patient improved, it settled between 97 and 98. This chart is a good example of a low and variable temperature in a functional condition, rising to normal as the physical function improved, and as the anxiety was allayed.

CASE 35.

No. 6921. Age 27.

DIAGNOSIS Haematemesis. Improved.

ADMITTED September 11th, 1930.

DISCHARGED October 8th, 1930.

Two years before the patient had been laid up with a tuberculous hip. On the previous day he had vomited greenish material. On the morning of admission he had a burning pain in the stomach, and vomited altered blood. He vomited blood several times after admission, and again on the next day, so he was given only rectal feeding for several days. There was melaena for 8 days after the haematemesis stopped, and abdominal discomfort for 6 days; but after this he was free of symptoms, and improved rapidly.

The TEMPERATURE on admission was 96·2, and at night was 97. For the next 4 days, while haematemesis and melaena were present, there was slight pyrexia, rising once to 99·2. For 3 more days it was normal, but on the 9th evening it was 96. Blood was present in the stools for 2 more days, but abdominal discomfort had ceased; and evidently the bleeding stopped about the time that the temperature became subnormal. After two falls to 96 it settled at 97. In every case of haemorrhage/

haemorrhage observed, the temperature kept up during active bleeding, and frequently, though not always, fell to subnormal afterwards.

CASE 36.

No. 8560. Age 50.

DIAGNOSIS Gastric Ulcer; Haematemesis. Died.

ADMITTED November 24th, 1932.

DIED November 29th 1932.

The patient gave a 15 years' history of epigastric pain, suggestive of a gastric ulcer. He had been given a diet, but had never kept to it. During the last year he had several severe attacks of pain, with haematemesis. He was operated on in a surgical ward, and acute inflammation of the duodenum was found, but no ulcer. The appendix was unhealthy, and was removed. Haematemesis recurred 4 times after operation, and after the 4th a blood transfusion from a son was given. Shortly after there was another attack haemorrhage, and the patient was admitted to the medical side. On admission he was very anaemic with red blood cell count of 1,600,000, and haemoglobin 15%; but he was mentally clear and quite comfortable. Next day there was vomiting/

vomiting of blood in considerable quantities; and the day after the patient was in extremis, quite unconscious, and pulseless at times. There was no vomiting, but there was evidently internal haemorrhage. A blood transfusion was given from the same donor, and the patient at once improved, and became semi-conscious. Next day he was slightly better, and conscious, but on the following day the temperature rose to 104, and he died. At post mortem a large ulcer was found in the cardiac end of the stomach.

The TEMPERATURE on admission after a haemorrhage was 98. On the second day while haematemesis was in progress, it was 97·4. On the 3rd day, when the patient was practically moribund, it was 98·4; on this day the blood transfusion was given. On the 4th evening, when the patient was conscious, there was a fall to 96, and next morning to 95.8. Then came the terminal pyrexia, rising to 104. In this case during the worst state of the patient the temperature kept up to the highest limit of normal. It kept up during active bleeding, and fell to subnormal afterwards. In none of the cases observed was there a low temperature during haemorrhage.

CASE 37.

No. 7302. Age 60.

DIAGNOSIS Chronic Gastritis. Improved

ADMITTED March 23rd, 1931.

DISCHARGED April 16th, 1931.

The patient was a miner, and 7 months previously he was poisoned by bad air in the pit. He was ill for several days with nausea, vomiting, and colicky pain, but recovered completely. Five months later he had a similar attack, with diarrhoea as well; and had never been quite well since. A week before admission he had another attack, which was improving, though not cured when he was admitted. He made a good recovery on alkalies and light diet; and nothing objective was found.

The TEMPERATURE was a fairly regular subnormal one throughout. Most of the time it ran between 96 and 97, with one rise to 98 in the first week, and one fall to 95 in the third. There was little variation in spite of a Barium enema, a test meal, and a Barium series, nor was there any change after getting up, or on relief of symptoms. This was probably a case of individual pecularity.

CASE 38.

No. 7773. Age 60.

DIAGNOSIS Castric Carcinoma. Not Improved.

ADMITTED November 11th, 1931.

DISCHARGED November 29th, 1931.

For five weeks the patient had been having abdominal pain, gradually increasing, and becoming more frequent. The pain was griping in character, and was chiefly in the left iliac fossa; there had been only one vomit, but some loss of weight. He was an obese florid old man; and nothing definite could be made out on examination; but the X-ray showed a filling defect on the lesser curvature. Operation was advised; but the patient refused, and went home against advice.

The TEMPERATURE was a swinging subnormal one, often varying about 3 degrees in 12 hours, between 95 and 98.4. There was no vomiting to account for the falls of temperature, so that the debilitating disease without inflection may be regarded as the cause.

CASE 39.

No. 8516. Age 47.

DIAGNOSIS Gastric Carcinoma. Died.

ADMITTED November 3rd, 1932.

DIED November 14th, 1932.

The patient gave a history of only 4 weeks' vomiting after meals, and epigastric pain for a few days. He had begun to lose weight recently. On admission he was dehydrated and emaciated; and there was a large mass palpable in the epigastrium. He was put on a milk diet, but the vomiting was so severe that on the 5th day he was put on glucose and saline per rectum only. He went rapidly downhill, and died on the 11th day. At the post-mortem a large carcinoma of the pyloric end of the stomach was found, infiltrating into the liver and transverse colon. The pylorus was nearly occluded, and the patient must have nearly starved to death.

The TEMPERATURE On admission was 97.6, for 4 days it ran between 97.4 and 99. During this time the patient was on a milk diet, and vomiting after every meal. On the 5th day, when rectal feeding was started, the temperature began to/

to fall, and went on falling steadily to 94·4 on the 11th day, when the patient died. The fall after stopping food by mouth was very pronounced, and was observed in all cases on rectal feeding for more than a day or two. Evidently the patient got more benefit from the milk by mouth, in spite of vomiting, and the degree of pyloric stenosis. This was one of the rare cases of a fall of temperature before death, and of death occurring at a subnormal temperature.

CASE 40.

No. 6504. Age 53.

DIAGNOSIS Chronic Interstitial Nephritis. Improved.

ADMITTED February 22nd, 1930.

DISCHARGED March 29th, 1930.

Ten months earlier the patient had had a chill, after which the signs of chronic nephritis gradually developed. On admission the blood-pressure was 220/165; there was albumin in the urine; and commencing heart-failure. He was treated with rest in bed for 5 weeks, mild purgatives and ephedrine by mouth; and improved considerably/

considerably. The blood-pressure came down to 180/135, and the albumin was much less.

The TEMPERATURE was a definitely subnormal one. In the first week it was a regular subnormal, between 96 and 97. In the second week it was more swinging and at a lower level, between 95 and 97. In the 3rd week there was a sudden rise from 95 to 98·4 in 12 hours, and a less marked swing next day. After this it was more irregular, and there was one evening drop to 94 on the 21st day. In the 4th and 5th weeks it continued between 95 and 97, until after getting up, when it remained between 94 and 95. Such a continuous low temperature is often a feature of chronic nephritis, and also of high blood-pressure without nephritis.

CASE 41.

No. 7018. Age 57.

DIAGNOSIS Cirrhosis of the Liver.
Improved.

ADMITTED October 30th, 1930.

DISCHARGED December 4th, 1930.

Seven years before the patient had been off work for 6 months with stomach trouble; and two/

two years before he had a similar attack. Three weeks before admission he started having epigastric pain, with vomiting of brown material, after which he was faint. The attack had not passed off, and he had constant pain and frequent vomiting. He was an old alcoholic, and was a thin emaciated old man. The liver was much diminished in size, and he was very anaemic. During the first 3 days he vomited altered blood, so was given rectal feeding only for 7 days. On the 8th day he was given McLean's first week diet; and on the 13th day he started McLean's second week diet. However, after 3 days he had a recurrence of pain, and was put back on the first week diet, until discharge.

The TEMPERATURE was a characteristic one. On admission in a state of exhaustion it was 95, and remained low for 24 hours. On the two following days, while the haematemesis was continuing, it became normal, between 97 and 98. On the 4th evening, after haemorrhage had stopped, it fell to 96, and remained at 96 for 2 days. On the 7th morning it was 95, and continued between 95 and 96 for 3 days. Up till now the patient/

patient had been on rectal feeding, and the temperature went on falling. On the 8th day food by mouth was given for the first time, and next day the temperature showed a slight rise, which continued until it reached 97 on the 11th evening. On the 13th day the diet was increased, and the temperature rose to between 97 and 98. On the 16th day, however, after an attack of pain, the diet was reduced, and fell once more to subnormal. This chart illustrates how during haemorrhage the temperature keeps up to at least normal level, and falls afterwards. It also shows the fall which occurs during rectal feeding, and the rise which accompanies an increase of diet.

CASE 42.

No. 6525. Age 65.

DIAGNOSIS Diabetes Mellitus. Much Improved.

ADMITTED March 3rd, 1930.

DISCHARGED March 31st, 1930.

For two or three years the patient had complained of slight irritation and frequency of micturition, and had recently lost some weight.

On/

On admission there was sugar in the urine, but no acetone, and the blood-sugar curve was typical of diabetes mellitus. He was put on a basal diet of 1500 calories for 11 days, after which there was only a trace of sugar. The diet was therefore increased to 1700 calories, and two days later he was sugar-free, and remained so until discharge. The diet was increased every few days up to 2400 calories, with no return of sugar, and without insulin.

The TEMPERATURE was a persistently subnormal one, with a definite tendency to rise as the glycosuria was checked and the diet increased. For the first fortnight it ran between 94 and 96, and hardly rose a point above 96. During this time sugar was present, and the diet only 1500 calories. In the 3rd week the glycosuria was checked, and the diet gradually increased; but there was little change in the temperature, which if anything ran at a lower level, and twice was 93·6. In the 4th week there was a rise from 93·6 to 98 in 24 hours; with a fall to 94 the next morning. But from this time there was a steady tendency towards normal; and on the day of discharge the temperature was 97.

CASE 43.

No. 6555. Age 48.

DIAGNOSIS Diabetes Mellitus. Much Improved.
Anxiety Neurosis.

The patient gave a history of worry for 5 weeks, with insomnia and weakness of the limbs. There were no diabetic symptoms, but sugar was found in the urine, and the blood-sugar curve was typical. There was no acetone. He was put on a diabetic diet of 1500 calories for 6 days and the sugar diminished. On the 6th evening he was given 5 units of insulin, and the same the next day; after this he had 5 units at 7 a.m. The diet was rapidly increased to 2300 calories, and in the 3rd week the patient was discharged, having lost all his symptoms and anxiety.

The TEMPERATURE was a very variable one, mostly subnormal. On admission it was 97·4, and kept to normal for 24 hours. On the 3rd day a fall to subnormal began, and reached 95·2 before starting the 1500 calorie diet. On the diet the temperature was more irregular and swinging, and fell to 93·4 and then to 93. At this point the patient received his first injection of insulin, and there was an immediate rise to 97·4 in 12 hours/

hours. In the evening the temperature fell again to 95, but from this time it only once fell to 94.2 and tended to swing higher to normal levels. Once it was 99., and on discharge it was 96. This chart illustrates several points commonly occuring in diabetes. There was a subnormal temperature on normal diet, while sugar was present; and a very low temperature resulted from the basal diet with loss of sugar combined. 93 was the lowest temperature observed in any case. With the administration of insulin the immediate rise was remarkable; and with insulin and increased diet the improvement held; though the temperature was not quite settled on discharge. The chart also shows the frequency of low temperature in the evening, as if fatigue during the day was badly borne.

CASE 44.

No. 8563. Age 27.

DIAGNOSIS Diabetes Mellitus.
Improved.

ADMITTED November 24th, 1932.

DISCHARGED December 22nd, 1932.

Three years before the patient had been in the ward, with typical diabetes mellitus, and had gone out with a 2800 Calorie diet and no insulin, he had kept strictly to diet, and was very well until 3 months before, when he began to suffer from thirst and increasing weakness. On admission sugar and acetone were present, and the blood-sugar was high. He was put on a 1500 calorie diet with increasing amounts of insulin, until he became sugar-free on the 14th day. After this the diet was increased rapidly to 2600 calories with 15 units of insulin twice a day. While on the 1500 calorie diet he felt perpetually hungry, and said he was being starved.

The TEMPERATURE was normal on admission, and remained between 97 and 98 for two days on ordinary diet, in spite of large amounts of sugar and acetone in the urine. As soon as the 1500 calorie diet was started, the temperature began to fall slowly, and reached 96 on the 4th evening/

evening. For several days it was rather swinging in character, but becoming more and more regular at 96. The urine was clear on the 14th day, and from this date the temperature hardly varied from 96., until discharge in the 4th week. This type of continuous subnormal temperature was frequently seen in diabetics when the disease was controlled. All were admitted with normal temperatures, and many showed a fall on commencing the low diet, often without a rise to normal after becoming sugar-free, or on increasing the diet. This suggested that insufficient food has more to do with the low temperature than the faulty metabolism.

CASE 45.

No. 8572. Age 53.

DIAGNOSIS Pernicious Anaemia. Much Improved.

ADMITTED December 1st, 1932.

DISCHARGED December 20th, 1932.

For 14 months the patient had been losing energy and becoming weaker. A fortnight before he had had to go to bed, and had been put on liver diet. On admission he had a distinct lemon yellow tint, no glossitis; and the red cell count/

count was 2,040,000, haemoglobin 45%, and colour index 1.1. The blood picture was typical of pernicious anaemia. He was given liver in full quantities, and improved steadily. In the 3rd week he was transferred to convalescent home.

The TEMPERATURE at no time was markedly subnormal. There was one fall to 96 on the evening after a test meal; and there were two other evening falls, one to 95.8 and one to 96 for no obvious cause. Otherwise the temperature was within normal limits, except for one rise to 99.2. This chart illustrates that low temperature is not a feature of pernicious anaemia, which is apt to be a febrile disease in the acute stages. In a convalescent patient like this one, there may be occasional falls with or without some obvious cause; but on the whole the temperature remains about normal.

CASE 46.

No. 6628. Age 11.

DIAGNOSIS Acute Lymphatic Leukaemia.
Worse.

ADMITTED April 17th, 1930

DISCHARGED May 15th, 1930.

The child gave a history of being tired for 4 weeks, with cough and breathlessness. On admission enlarged glands were found in the neck, axillae, and groins; while the spleen was 1½ inches below the umbilicus. The white count was 632,000, of which 92% were large lymphocytes. There was a pleural effusion which required aspiration on several occasions. The child went rapidly downhill, and went home worse than on admission.

The TEMPERATURE was markedly swinging or hectic during the first week, varying between 98·4 and 95. Twice there was a swing from one figure to the other in 12 hours. In the second week it ran rather lower, being mostly between 95 and 97, until the end of the second and beginning of the 3rd week. At this stage the temperature began to swing above normal, and a swinging pyrexia developed, which continued until discharge/

discharge. The 4th and 5th weeks are not included here, as they show merely pyrexia from 97 to 100 or 101. This chart is a very typical example of the rising temperature in increasing anaemia.

CASE 47.

No. 6597. Age 37.

DIAGNOSIS Painful Amputation Stump. Transferred to Surgical Ward.

ADMITTED March 1st, 1930.

DISCHARGED March 8th, 1930.

Four years before the patient had had a septic finger, the middle finger of the right hand. Years before the finger had been amputated and the stump was still painful. He had had 5 operations since, and was sent to the medical side for examination of the nervous system. He was not in pain except when the hand was touched, but the stump was so tender that the hand was useless, and he lay with it resting on a pillow. No nerve lesion was detected, and at the end of a week he returned to the surgical ward for further operation.

The TEMPERATURE was a persistently subnormal one with only two rises. On admission it was 98, and on the 5th morning it was also 98; otherwise/

otherwise it ran between 95 and 96. This is a good example of a subnormal temperature accompanying a non-febrile condition with pain, and is of interest because there is no record of sleeplessness, to which many falls to subnormal can be attributed.

CASE 48.

No. 6501. Age 42.

DIAGNOSIS Peroneal Muscular Atrophy. Not Improved.

ADMITTED February 22nd, 1930.

DISCHARGED March 14th, 1930.

The patient had had an accident to his right leg 15 months previously, which had left him with some difficulty in walking. On admission there was some weakness and wasting of the peroneal muscles, but no nerve lesion was detected. He was rather neurotic and worried about himself. The walking did not improve while he was in the ward.

The TEMPERATURE was a persistently low one, with several rises to normal. During the first 4 days, while the patient was in bed, it was/

was regular between 96 and 97; and was not affected by an aloin pill and lumbar puncture. He got up on the 4th day, and next morning there was a drop to 94, followed by a swing of over 4 degrees to 98·4 at night. During the 2nd week the temperature was more irregular, often swinging, and remaining between 96 and 98, except for one evening fall to 95. On the day of discharge there was a morning temperature of 94·2. A sudden fall on the last morning is a fairly common occurrence, and may be attributed to the excitement of preparing to go home.

CASE 49.

No. 7311. Age 35.

DIAGNOSIS Rheumatic Fever.
Recovered.

ADMITTED March 27th, 1931.

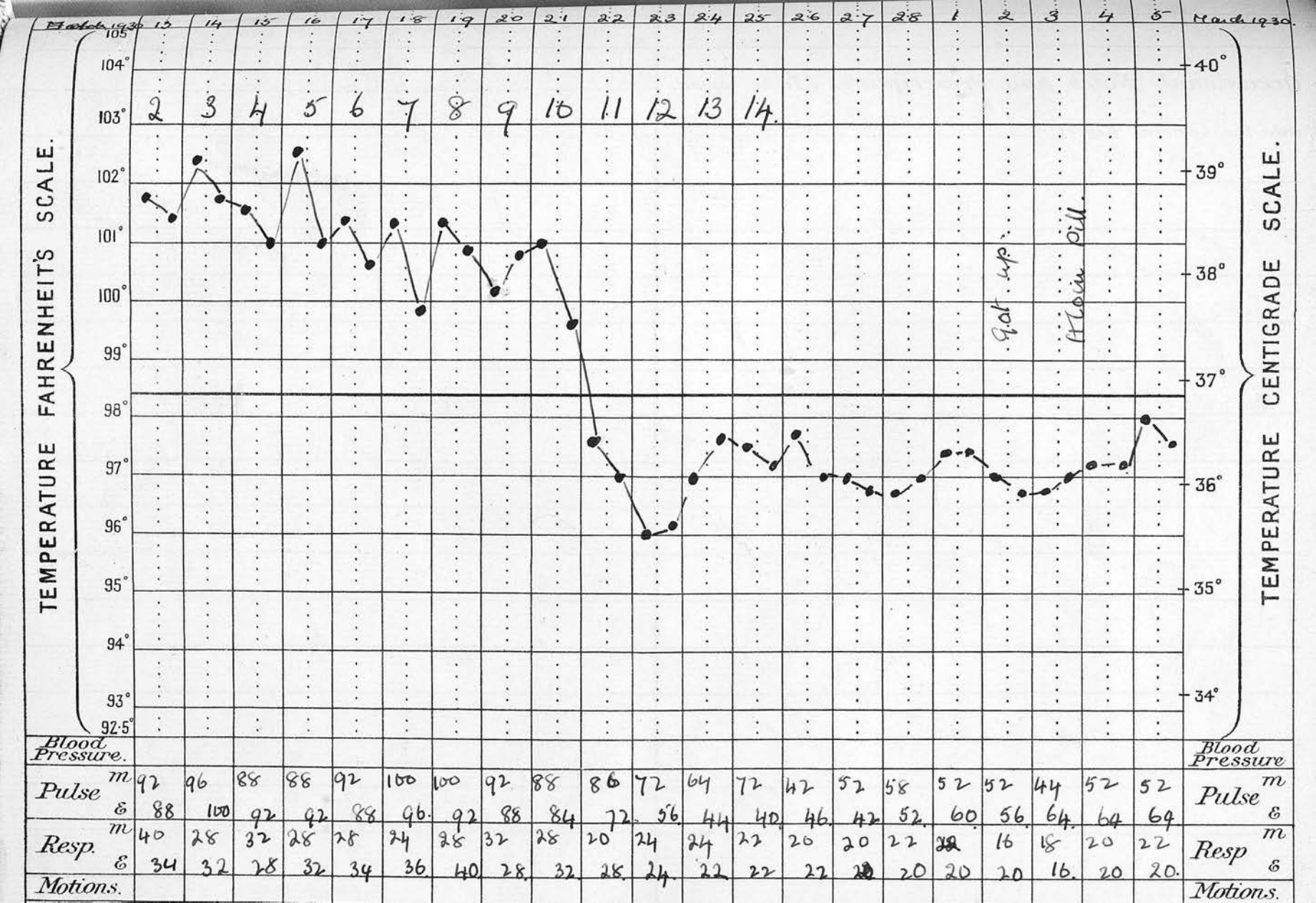
DISCHARGED April 21st, 1931.

The patient had had one previous attack of rheumatic fever some years before, though his heart was not affected. Two days before admission there was an acute onset of fever and pain in the joints, many of which were affected. On admission he was in great pain, though/

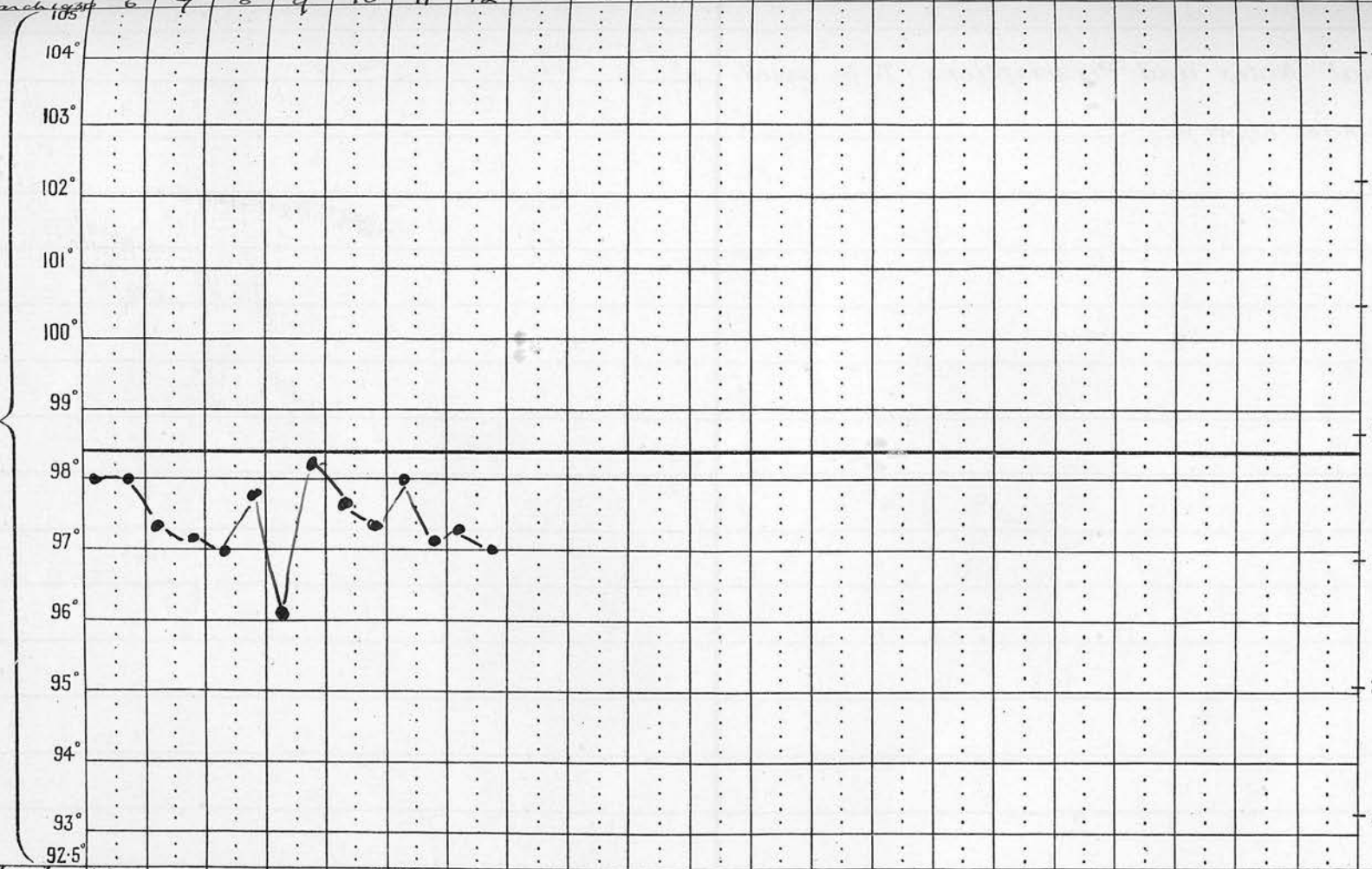
though the temperature was only 98. He was put on sodium salicylate in doses of 20 grains four-hourly, but the pains did not disappear for 11 days. The salicylate was stopped for 24 hours, and then continued in doses of 20 grains thrice daily. He improved rapidly, and made a good recovery. On discharge there was a faint mitral systolic murmur.

The TEMPERATURE was a remarkable one. On admission it was only 98, and during the first 5 days there was very slight pyrexia, which only once touched 100. At other times it did not reach even 99, on either the daily or four-hourly charts. On the 6th day it fell to 97, and continued to fall, first to 95, and on the 11th evening to 93.2. This was the first day without pain in the joints, and after 11 days of large doses of salicylate. In view of the low temperature salicylates were stopped for 24 hours, and the temperature rose to 95 in the morning, and 98 at night. On the 13th day smaller doses of salicylates were started, and the temperature settled to between 96 and 97 until discharge. At first sight this chart seems to show the excessive temperature-reducing properties of salicylate, but no such effect/

effect was observed in any other patient on salicylate; so this case must be regarded as one of individual pecularity. Even when acutely ill the patient did not run as high a temperature as is usual in rheumatic fever.


Feb. 1930
13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
March 1930.
1 2 3 4 5
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
2 3 4 5 6 7 8 9 10 11 12 13 14
got up.
Aloin pill.
Blood Pressure.
Pulse m 92 96 88 88 92 100 100 92 88 86 72 64 72 42 52 58 52 52 44 52 52
Pulse & 88 100 92 92 88 96 92 88 84 72 56 44 40 46 42 52 60 56 64 64 64
Resp. m 40 28 32 28 28 24 28 32 28 20 24 24 22 20 20 22 22 16 18 20 22
Resp & 34 32 28 32 34 36 40 28 32 28 24 22 22 22 20 20 20 16 20 20
Motions.
Blood Pressure
Pulse m
Pulse &
Resp m
Resp &
Motions.

March 6th

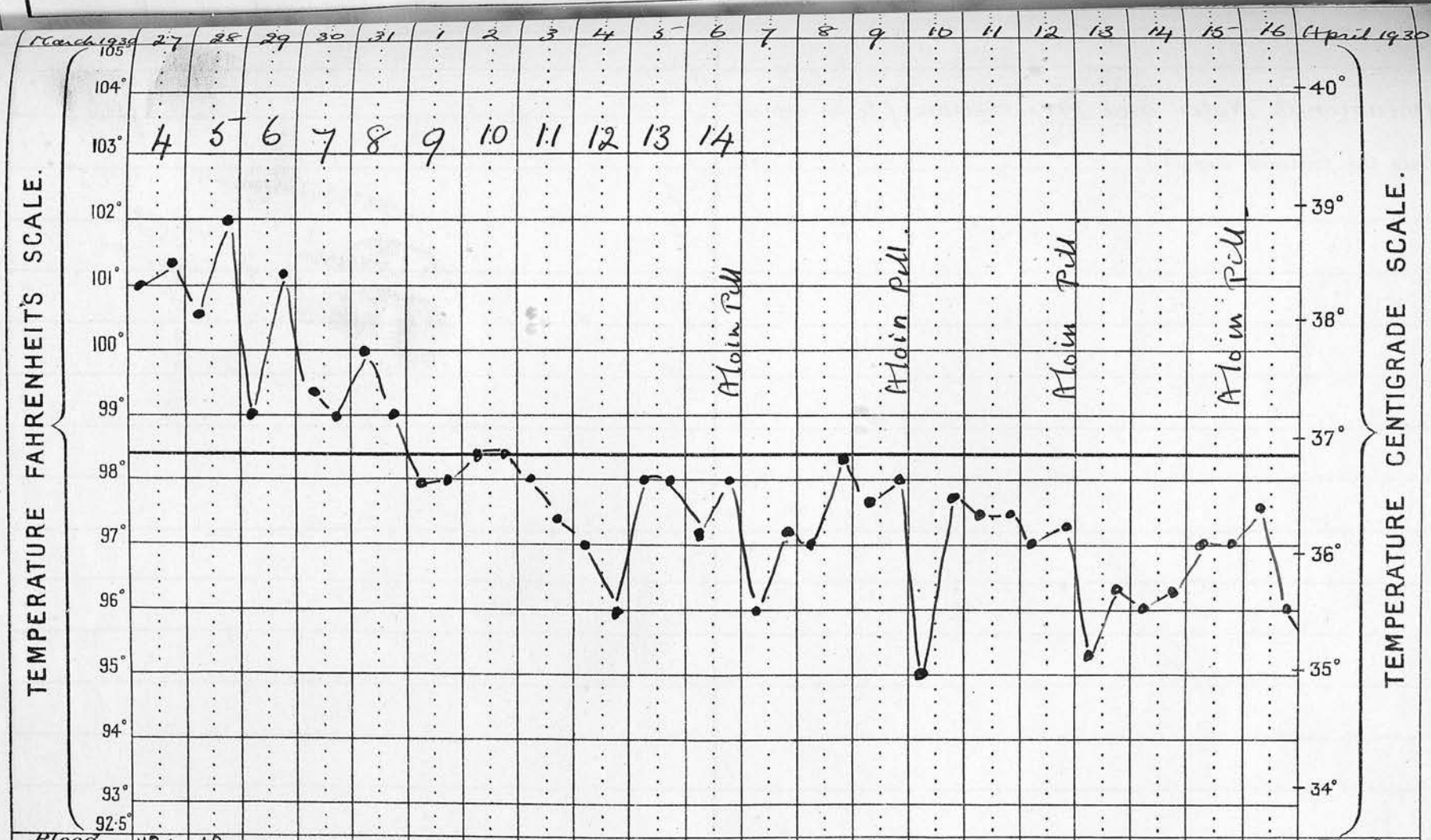


	6	7	8	9	10	11	12
Blood Pressure.	118/~~58~~					118/76	
Pulse m	80	66	66	76.	74	84	76
Pulse e	78.	64.	64	68.	76.	80.	72.
Resp. m	20	20	18	20	20	18	20
Resp. e	18	16	18	18	20	20	20
Motions.							
Urine, ozs.							

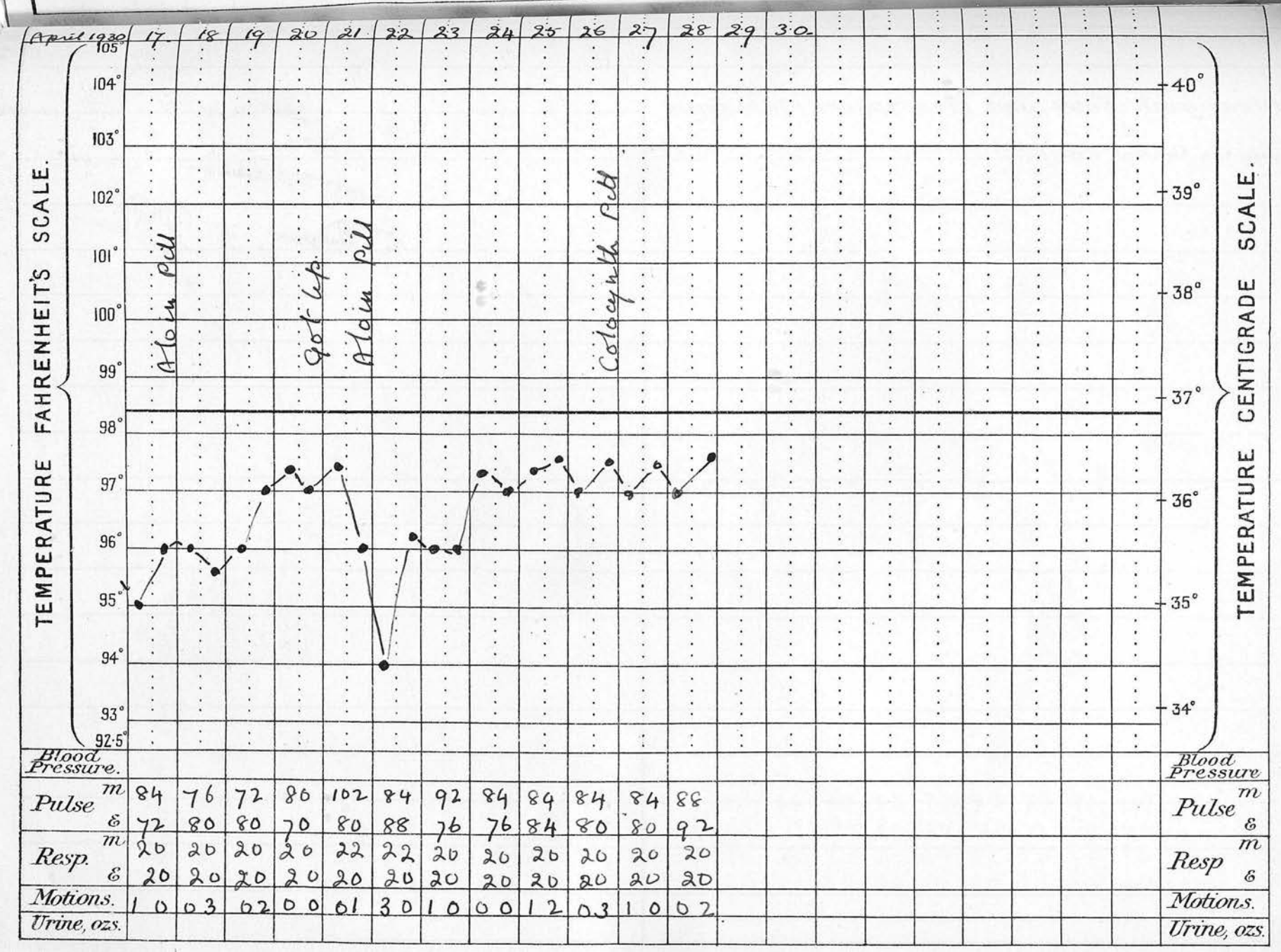
Blood Pressure
Pulse m
Pulse e
Resp m
Resp e
Motions.
Urine, ozs.

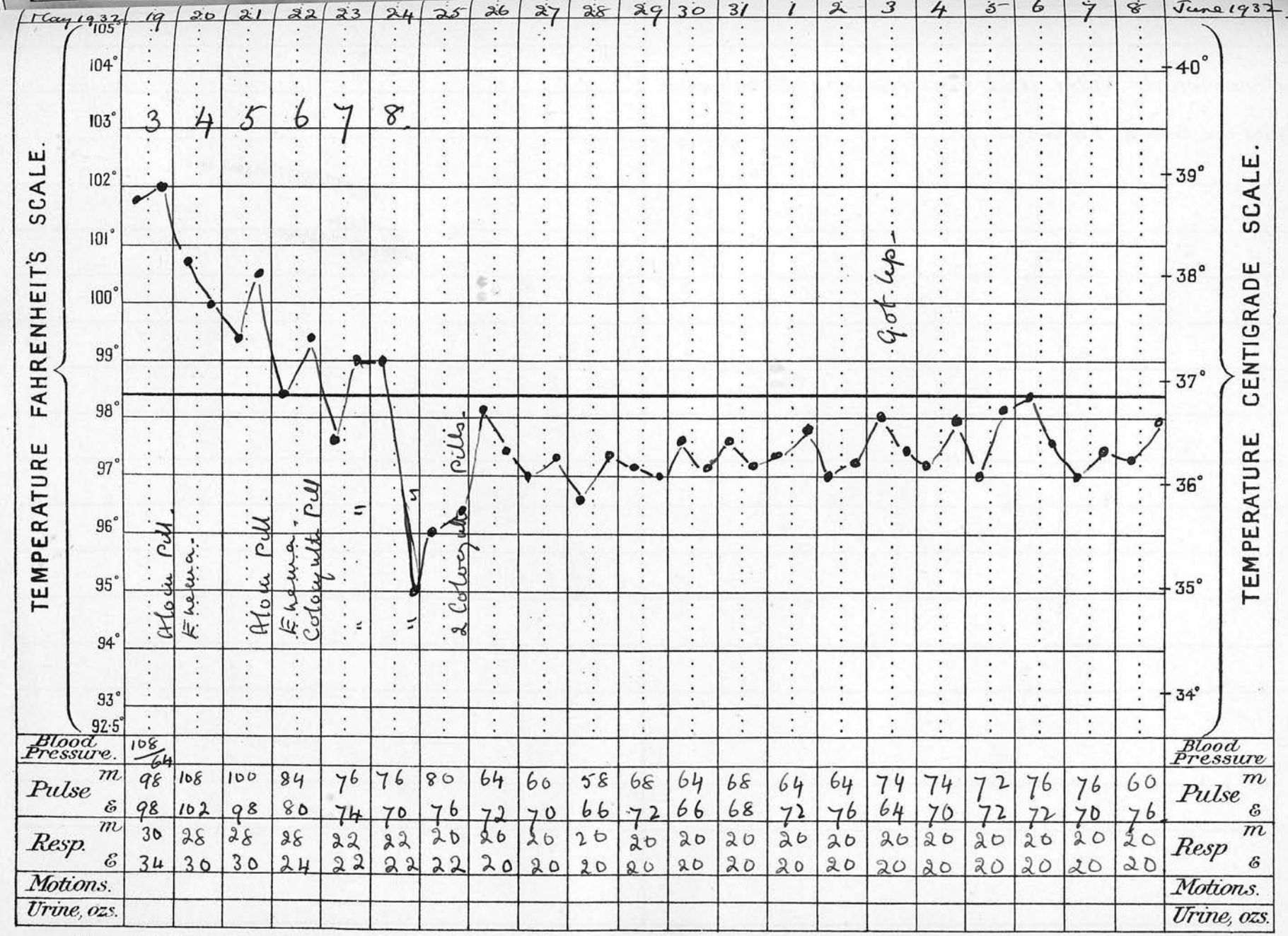
500—c.—1 32.—8. 32.

Complications



		27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Blood Pressure.		110/56	160/110												120/46								Blood Pressure
Pulse	m	116	112	116	120	124	92	94	96	96	92	80	84	84	88	100	88	88	84	80	80	88	Pulse
	e	116	136	124	124	96	96	100	88	84	92	96	80	100	96	92	84	88	88	80	80	76	
Resp.	m	36	30	36	40	44	28	28	86	28	28	22	22	20	22	20	20	20	20	20	20	20	Resp
	e	36	36	40	40	32	28	40	32	28	24	24	20	22	24	20	20	20	20	20	20	20	
Motions.		1	00	10	01	10	01	01	11	11	11	00	10	21	00	20	00	21	23	10	10	01	Motions.
Urine, ozs.																							Urine, ozs.


April 1920
17. 18 19 20 21 22 23 24 25 26 27 28 29 30
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
Aloin Pill
Got up.
Aloin Pill
Colocynth Pill
Blood Pressure.
Pulse m 84 76 72 80 102 84 92 84 84 84 84 88
Pulse e 72 80 80 70 80 88 76 76 84 80 80 92
Resp. m 20 20 20 20 22 22 20 20 20 20 20 20
Resp. e 20 20 20 20 20 20 20 20 20 20 20 20
Motions. 1 0 0 3 0 2 0 0 1 3 0 1 0 0 0 1 2 0 3 1 0 0 2
Urine, ozs.


May 1932
19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8
June 1932
TEMPERATURE FAHRENHEIT'S SCALE.
TEMPERATURE CENTIGRADE SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
40° 39° 38° 37° 36° 35° 34°
3 4 5 6 7 8
Aloin Pill.
Ehenna.
Aloin Pill
Ehenna. Colocynth Pill
"
"
"
2 Colocynth Pills.
got up.
Blood Pressure. 108/64
Pulse m 98 108 100 84 76 76 80 64 60 58 68 64 68 64 64 74 74 72 76 76 60
Pulse e 98 102 98 80 74 70 76 72 70 66 72 66 68 72 76 64 70 72 72 70 76
Resp. m 30 28 28 28 22 22 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
Resp e 34 30 30 24 22 22 22 20 20 20 20 20 20 20 20 20 20 20 20 20 20
Motions.
Urine, ozs.

500—c.—1 32.—8. 32

April 1930

	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3
Blood Pressure.																					
Pulse m		130	108	104	104	104	88	84	92	92	80	76	84	72	76	84	84	72	88	94	72
Pulse e	108	106	120	104	100	88	80	88	80	80	80	80	76	80	72	80	76	84	80	72	72
Resp. m		40	28	32	22	24	32	22	22	26	22	20	20	24	24	20	20	20	20	18	20
Resp. e	36	36	36	34	32	28	20	28	22	20	22	20	20	24	20	22	20	20	20	24	20
Motions.																					
Urine, ozs.																					

TEMPERATURE FAHRENHEIT'S SCALE.

105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°

TEMPERATURE CENTIGRADE SCALE.

40° 39° 38° 37° 36° 35° 34°

May 1930.

Blood Pressure.

Pulse m

Pulse e

Resp. m

Resp. e

Motions.

Urine, ozs.

Kerma-Coccaga.

Kerma-

Coccaga-

Atoin pill

Got lip-

500—c.—1 32.—8. 32.

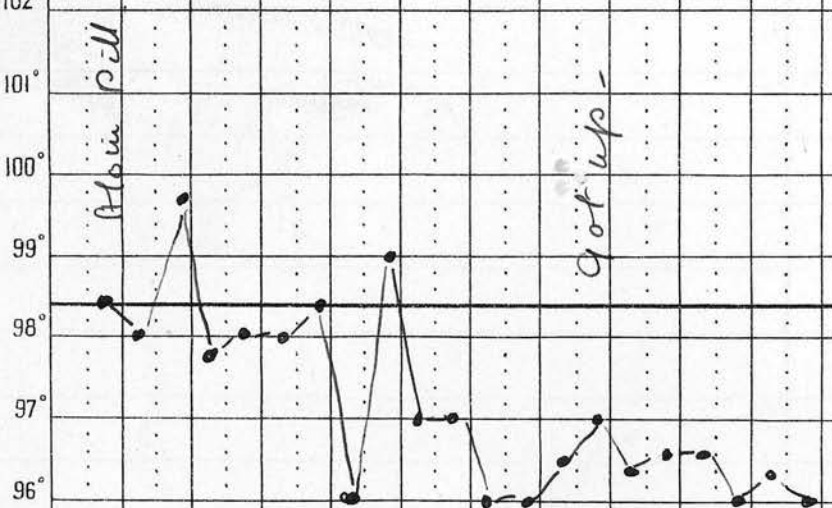
April 1930 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 1 | 2 | 3 | May 1930

TEMPERATURE FAHRENHEIT'S SCALE.

105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°

TEMPERATURE CENTIGRADE SCALE.

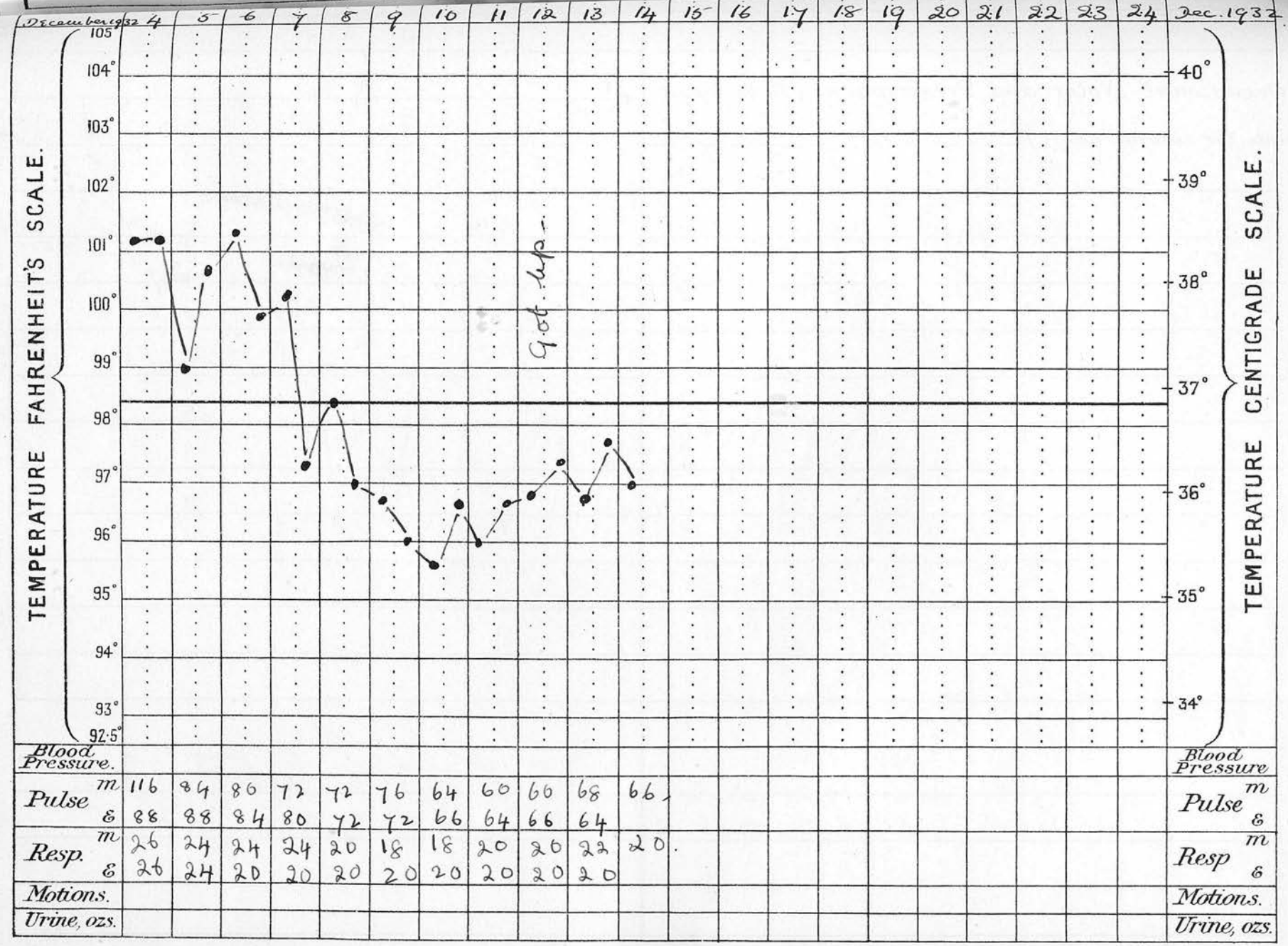
40° 39° 38° 37° 36° 35° 34°



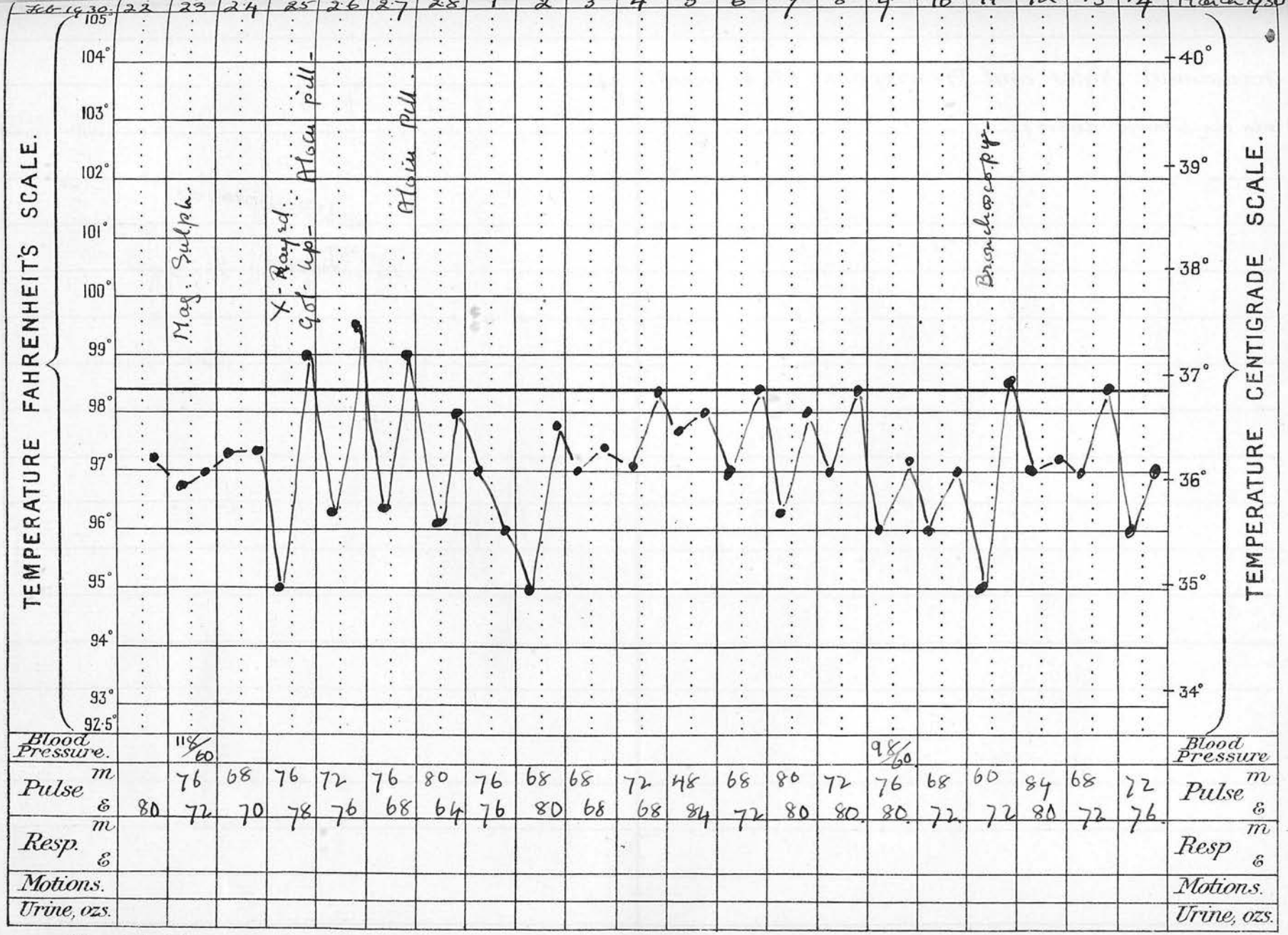
	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3
Blood Pressure.																					
Pulse m		72	68	72	88	68	80	68	56	52	84										
Pulse &	68	72	68	78	68	64	72	70	60	52	64										
Resp. m																					
Resp. &																					
Motions.																					
Urine, ozs.																					

Blood Pressure. | Pulse m & | Resp. m & | Motions. | Urine, ozs.

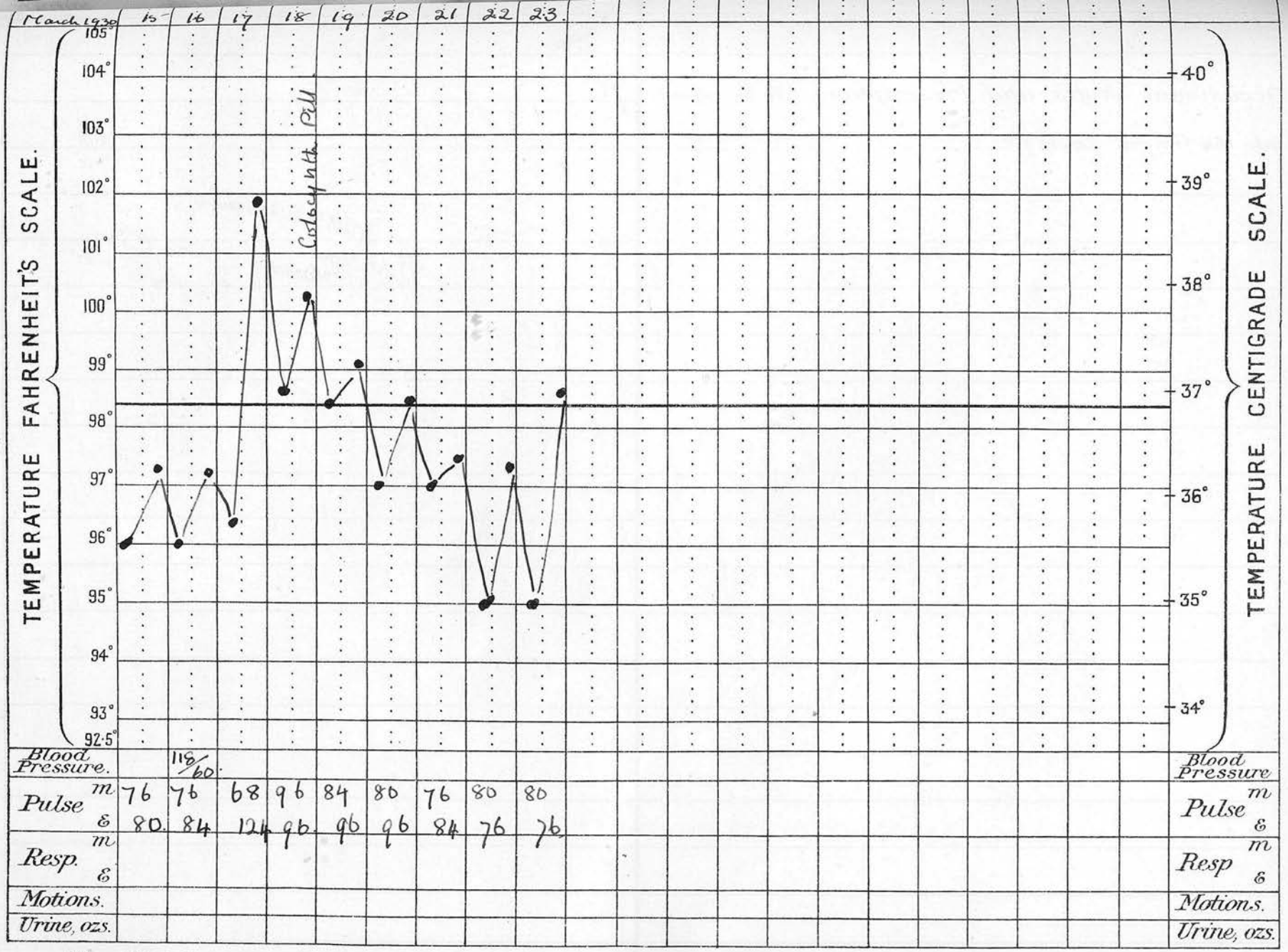
500—c.—1 32.—8. 32.


December 1932
4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Dec. 1932
TEMPERATURE FAHRENHEIT'S SCALE.
105
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Got up.
Blood Pressure.
Pulse m 116 84 86 72 72 76 64 60 66 68 66
Pulse ε 88 88 84 80 72 72 66 64 66 64
Resp. m 26 24 24 24 20 18 18 20 20 22 20
Resp. ε 26 24 20 20 20 20 20 20 20 20
Motions.
Urine, ozs.
Blood Pressure
Pulse m ε
Resp m ε
Motions.
Urine, ozs.

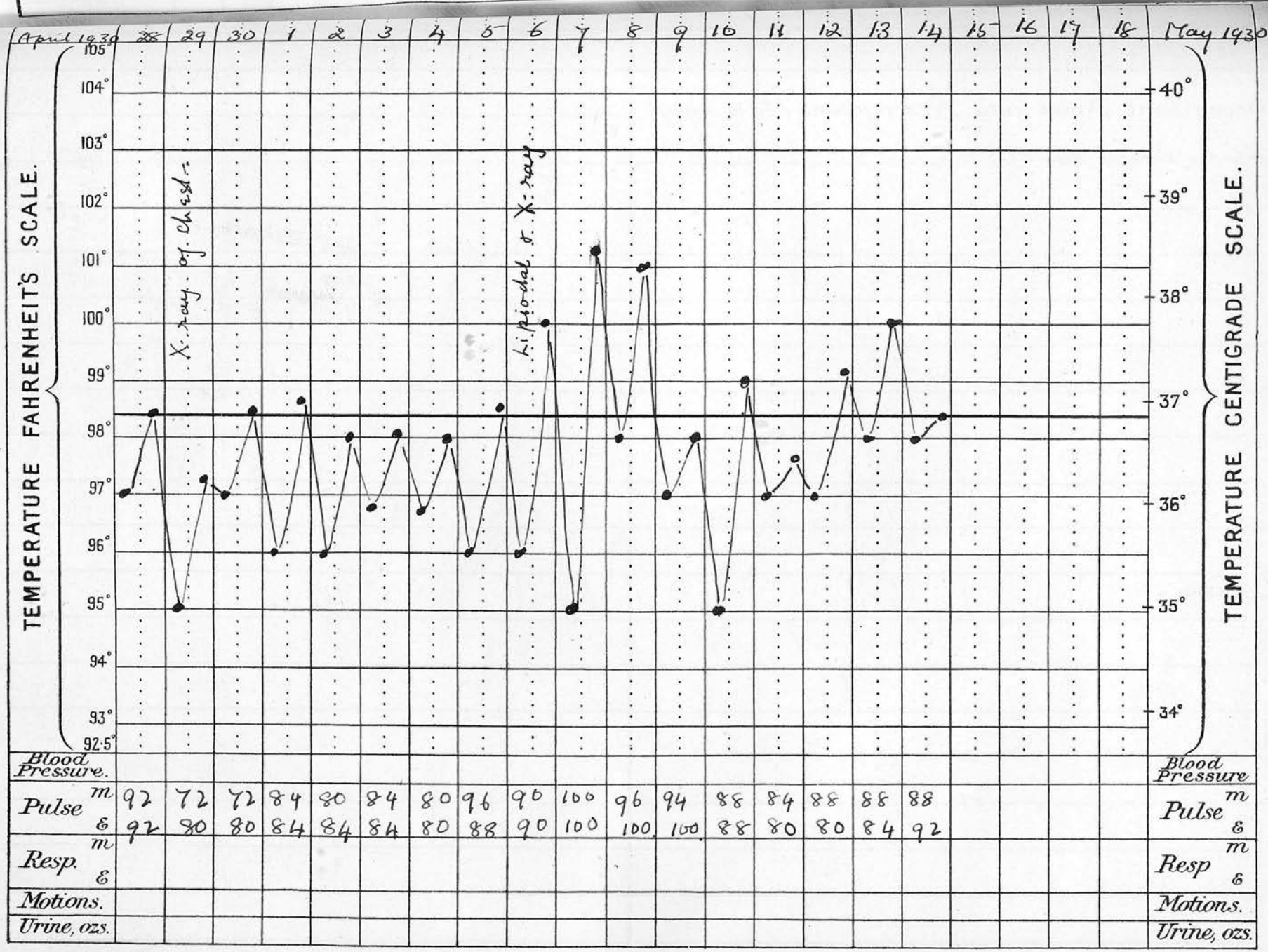
500—c.—1 32.—8. 32.


Feb 1930
22 23 24 25 26 27 28 1 2 3 4 5 6 7 8 9 10 11 12 13 14
March 1930
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92.5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
Mag. Sulph.
X-Ray'd. Got up - Nasal pill -
Nasal pill.
Bronchoscopy -
Blood Pressure. 118/60 98/60
Pulse m 76 68 76 72 76 80 76 68 68 72 48 68 80 72 76 68 60 84 68 72
Pulse & 80 72 70 78 76 68 64 76 80 68 68 84 72 80 80 80 72 72 80 72 76
Resp. m
Resp. &
Motions.
Urine, ozs.

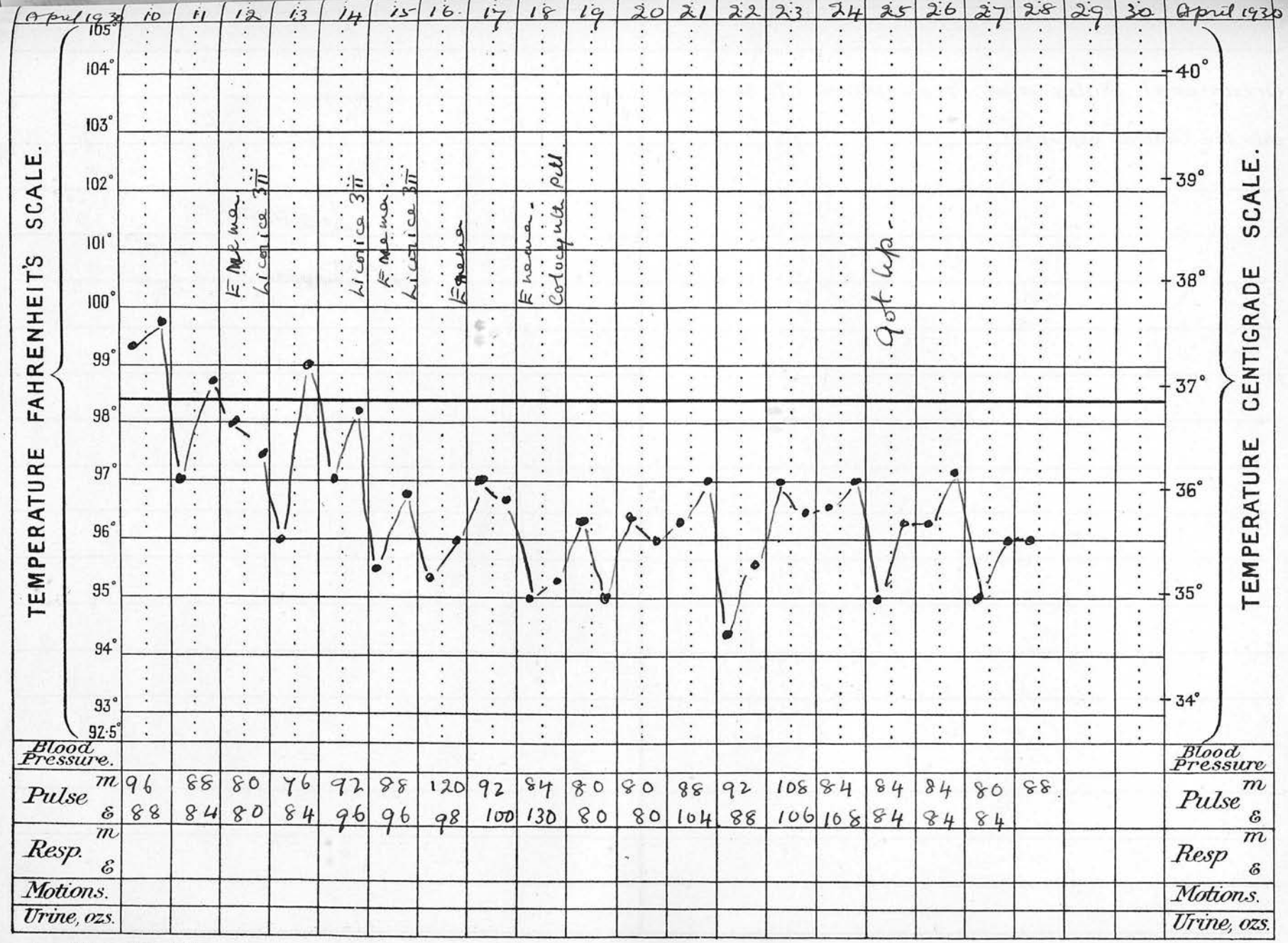
500—c.—1 32.—8. 32.


March 1930
15
16
17
18
19
20
21
22
23.
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
Catheterized
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Blood Pressure.
118/60
Pulse m 76 76 68 96 84 80 76 80 80
Pulse & 80. 84 124 96. 96 96 84 76 76.
Resp. m
Resp. &
Motions.
Urine, ozs.

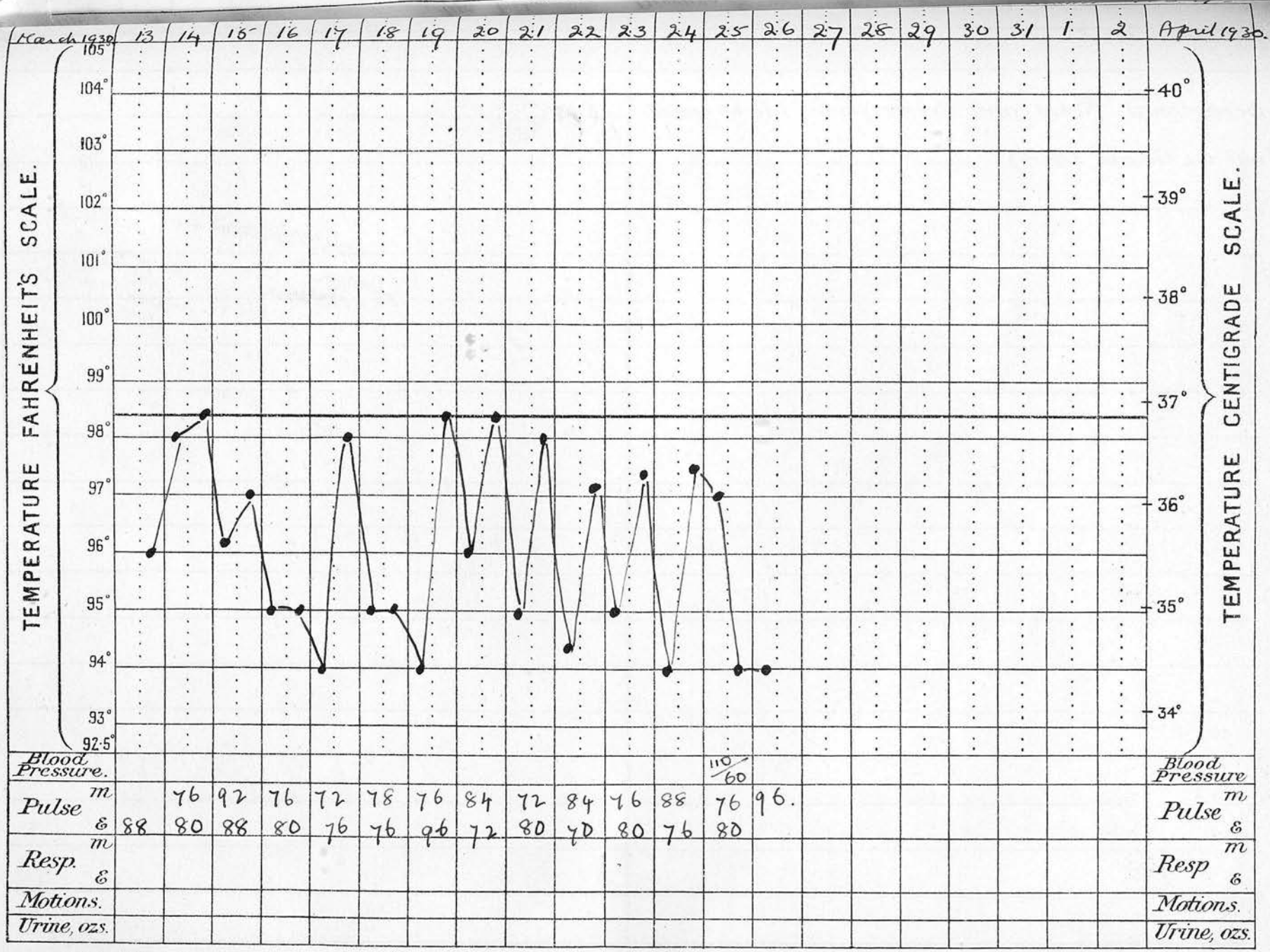
500—c.—1 32.—8. 32.


April 1930
28
29
30
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
May 1930
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
X-ray of chest
Li. pleural effusion. X-ray
Blood Pressure.
Pulse m 92 72 72 84 80 84 80 96 90 100 96 94 88 84 88 88 88
Pulse & 92 80 80 84 84 84 80 88 90 100 100 100 88 80 80 84 92
Resp. m
Resp. &
Motions.
Urine, ozs.

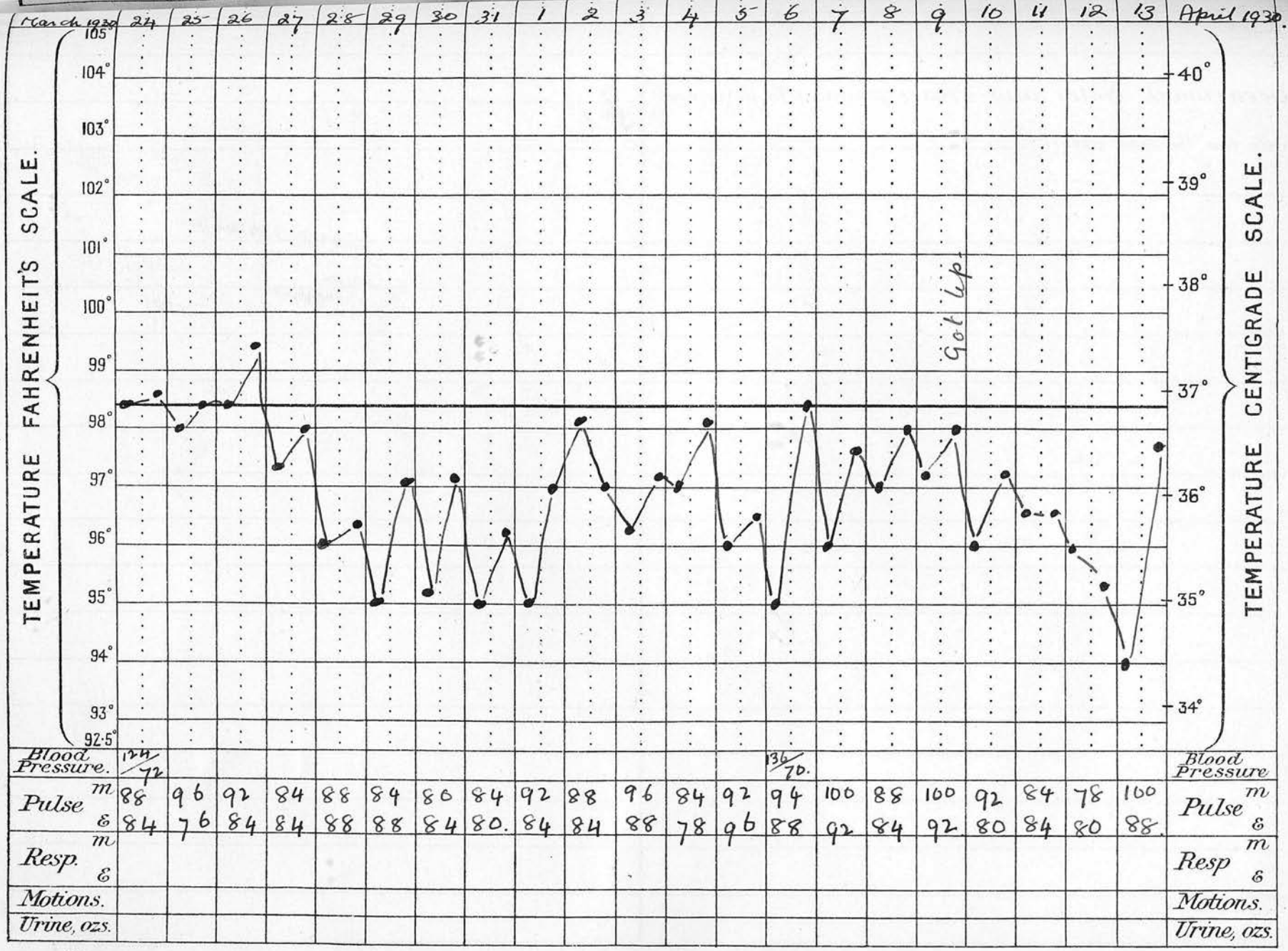
500—c.—1 32.—8. 32.


April 1930
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
April 1930
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
E Mehnert Licenica 3ii
E Mehnert Licenica 3ii
E Mehnert Licenica 3ii
E Mehnert
E Mehnert Colocynth pill
Got Lipa
Blood Pressure.
Pulse m 96 88 80 76 92 88 120 92 84 80 80 88 92 108 84 84 84 80 88
Pulse e 88 84 80 84 96 96 98 100 130 80 80 104 88 106 108 84 84 84
Resp. m
Resp. e
Motions.
Urine, ozs.
Blood Pressure
Pulse m e
Resp m e
Motions.
Urine, ozs.

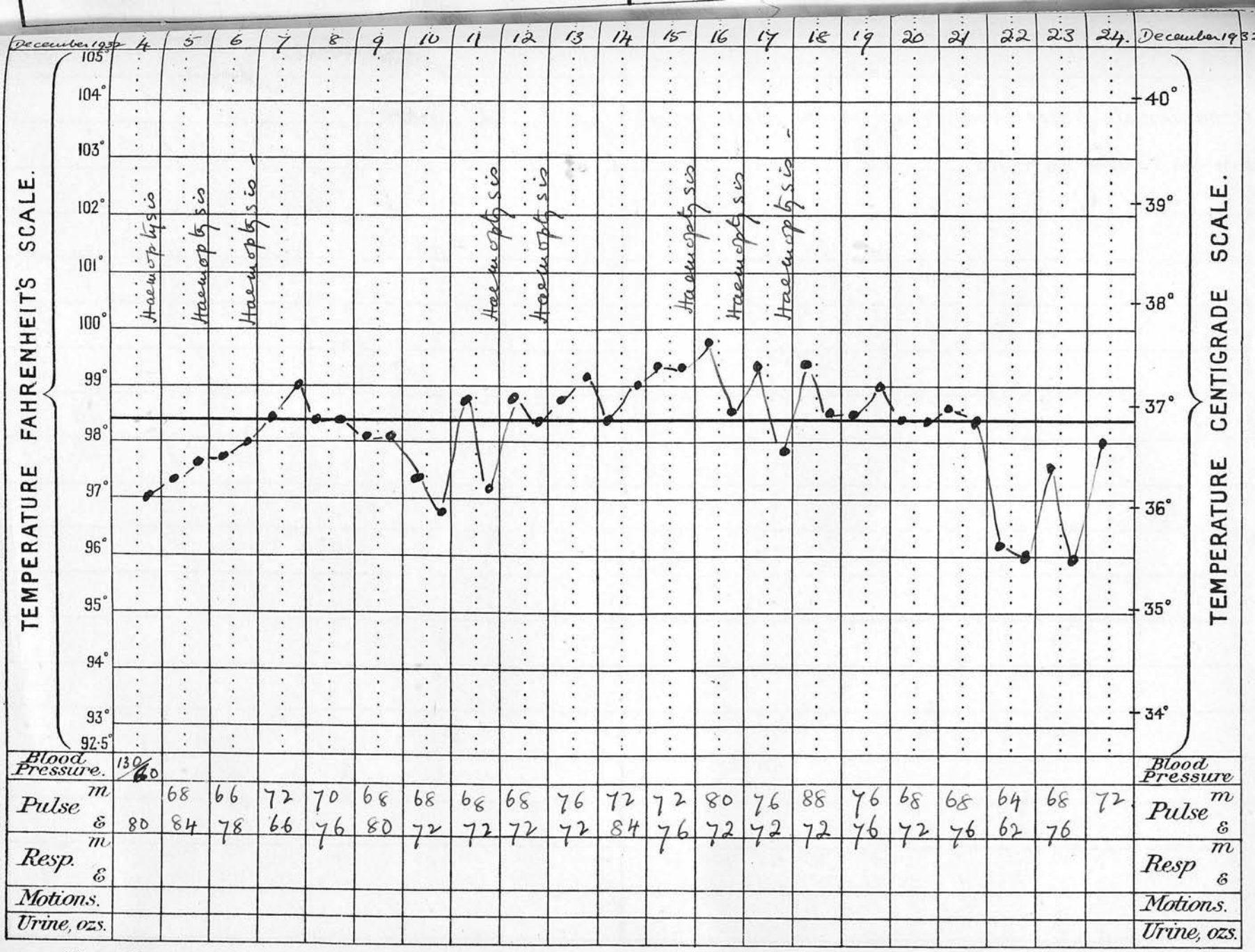
500—c.—1 32.—8. 32.


March 1930
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
1
2
April 1930.
TEMPERATURE FAHRENHEIT'S SCALE.
105
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Blood Pressure.
110/60
Blood Pressure
Pulse m
Pulse &
88
76 80
92 88
76 80
72 76
78 76
76 96
84 72
72 80
84 70
76 80
88 76
76 80
96.
Resp. m
Resp &
Motions.
Urine, ozs.

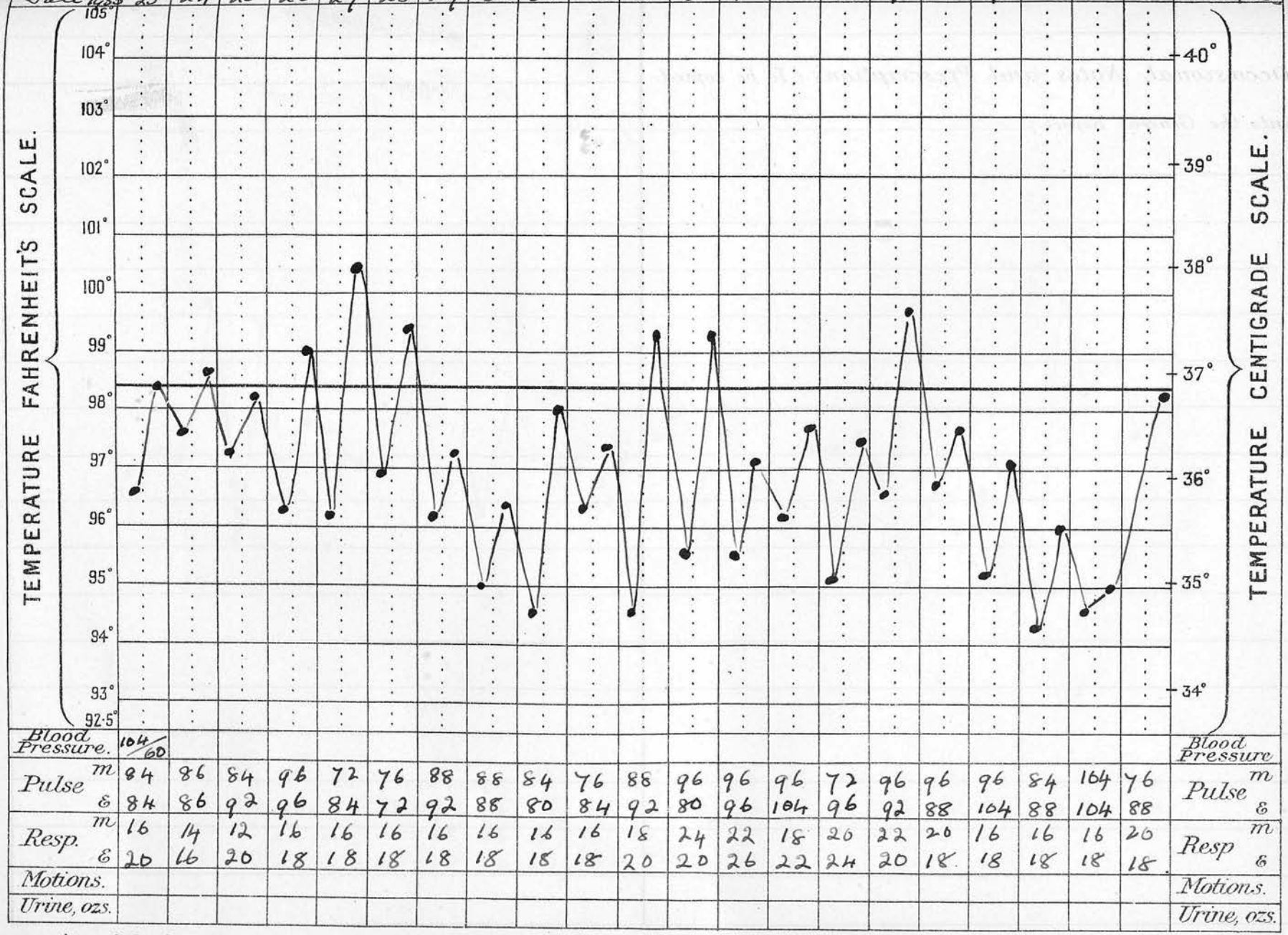
500—c.—1 32.—8. 32.


March 1930
24
25
26
27
28
29
30
31
1
2
3
4
5
6
7
8
9
10
11
12
13
April 1930.
TEMPERATURE FAHRENHEIT'S SCALE.
105
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Got up.
Blood Pressure.
124/72
136/70.
Pulse m
88 96 92 84 88 84 80 84 92 88 96 84 92 94 100 88 100 92 84 78 100
Pulse ε
84 76 84 84 88 88 84 80. 84 84 88 78 96 88 92 84 92 80 84 80 88.
Resp. m
Resp ε
Motions.
Urine, ozs.

500—c.—1 32.—8. 32.


December 1932
4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24.
December 1932
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
Haemoptysis
Blood Pressure. 130/60
Pulse m 68 66 72 70 68 68 68 68 76 72 72 80 76 88 76 68 68 64 68 72.
Pulse e 80 84 78 66 76 80 72 72 72 72 84 76 72 72 72 76 72 76 62 76
Resp. m
Resp e
Motions.
Urine, ozs.

500—c.—1 32.—8. 32.


Jan 1933
23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12
Feb 1933
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Blood Pressure. 104/60
Pulse m 84 86 84 96 72 76 88 88 84 76 88 96 96 96 72 96 96 96 84 104 76
Pulse & 84 86 92 96 84 72 92 88 80 84 92 80 96 104 96 92 88 104 88 104 88
Resp. m 16 14 12 16 16 16 16 16 16 16 18 24 22 18 20 22 20 16 16 16 20
Resp & 20 16 20 18 18 18 18 18 18 18 20 20 26 22 24 20 18 18 18 18 18
Motions.
Urine, ozs.
Blood Pressure
Pulse m
Pulse &
Resp m
Resp &
Motions.
Urine, ozs.

1M—C.—8. 32. —12. 32.

Jan 1933

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	Feb 1933
Blood Pressure.	128/80																					Blood Pressure
Pulse m	76	84	80	80	84	76	84	72	86	86	72	80	76	76	80	84	76	76	88	88	84	Pulse m
Pulse e	96	112	104	88	76	88	76	92	96	88	92	88	96	78	88	68	68	84	100	84	88	Pulse e
Resp. m	16	16	18	18	20	20	28	20	18	16	14	16	18	16	16	16	16	18	16	16	18	Resp m
Resp. e	16	20	20	20	22	20	20	24	20	18	18	18	18	18	16	16	18	18	18	20	18	Resp e
Motions.																						Motions.
Urine, ozs.																						Urine, ozs.

Gastro-intestinal upset.

Chill. Slight Rigor.

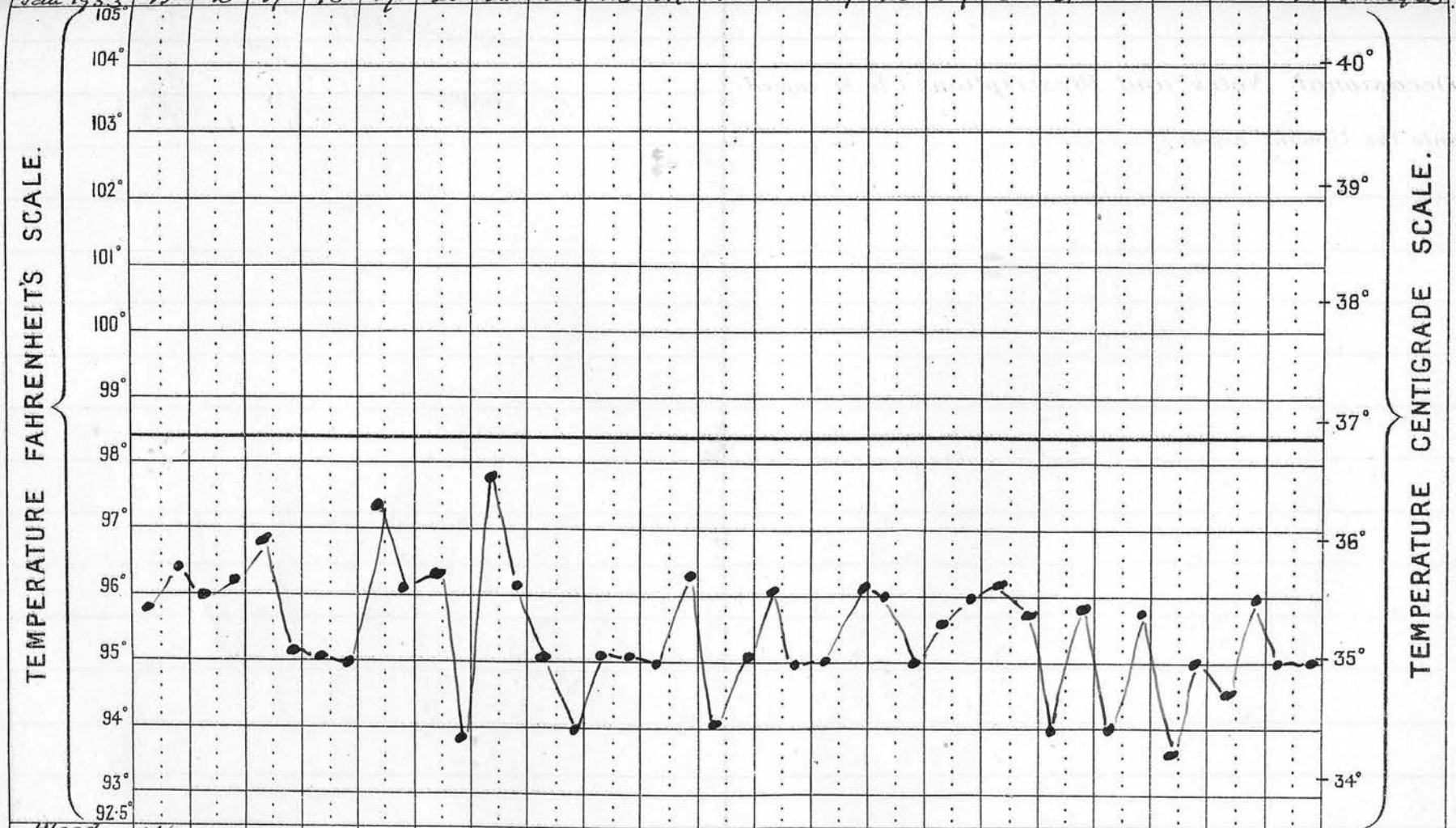
TEMPERATURE FAHRENHEIT'S SCALE.

105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92.5°

TEMPERATURE CENTIGRADE SCALE.

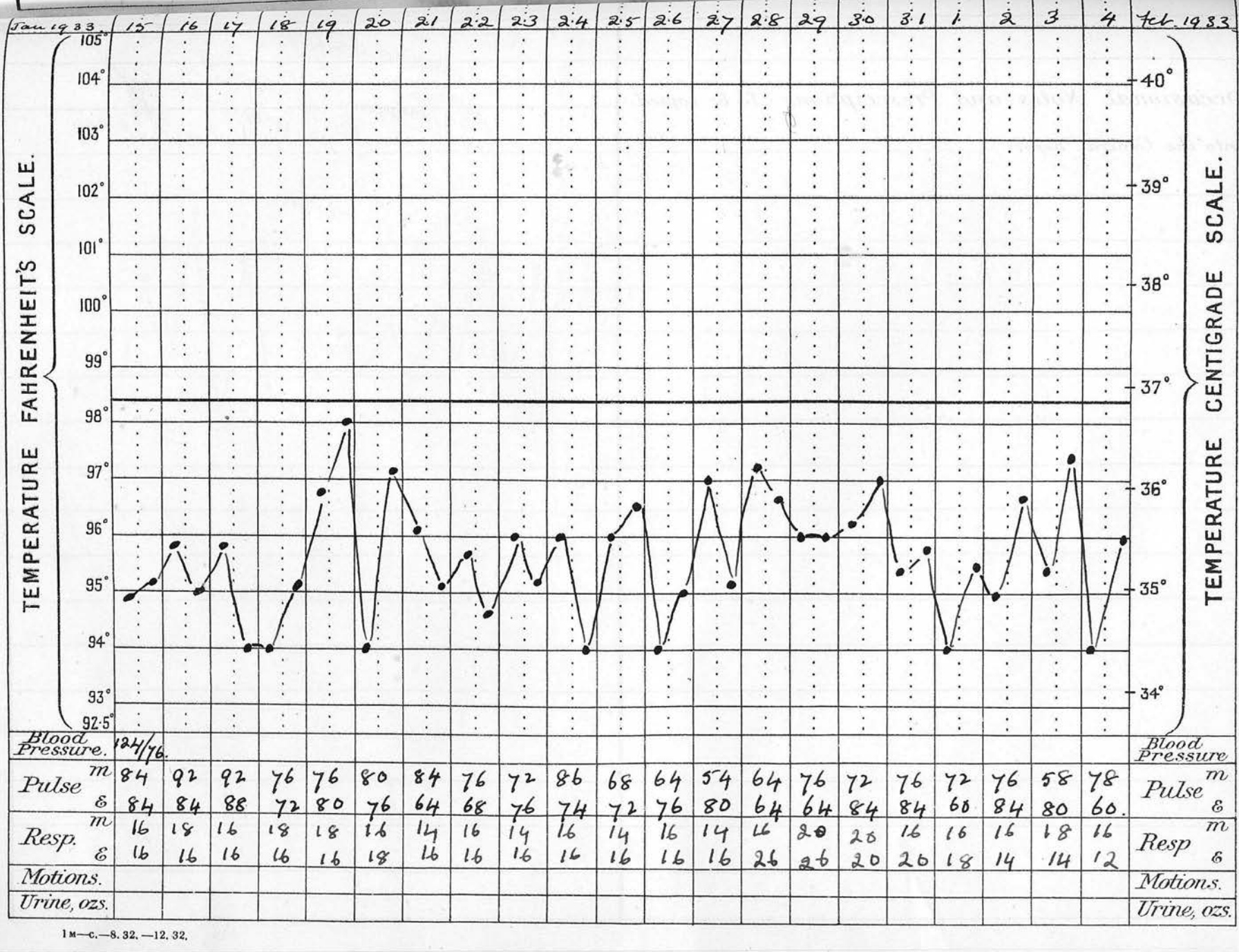
40° 39° 38° 37° 36° 35° 34°

1M—c.—8. 32. —12. 32.

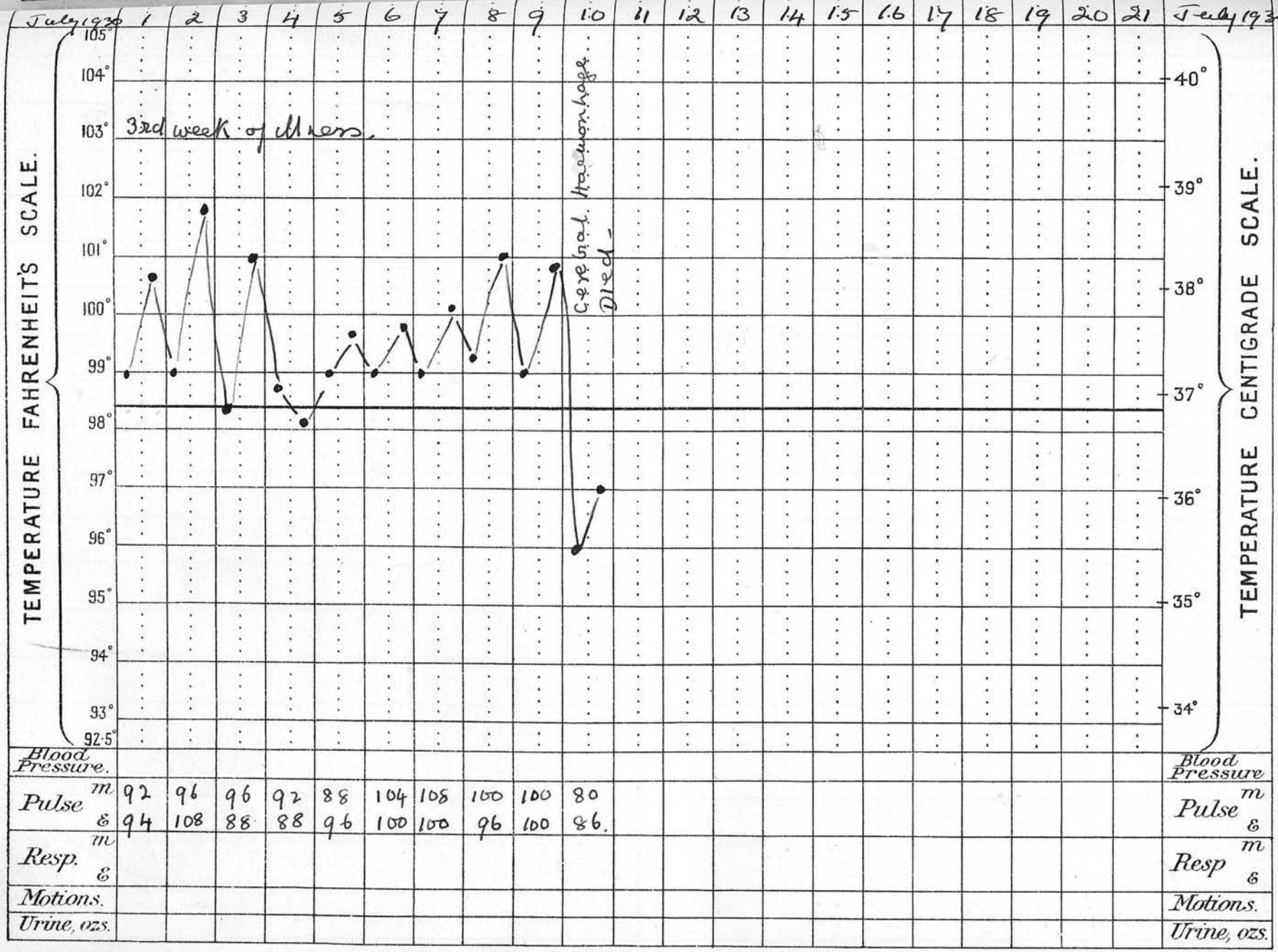


Blood Pressure.	126/72																						Blood Pressure
Pulse m	72	72	80	80	82	72	84	76	68	72	70	80	68	80	72	80	80	84	76	80			Pulse m
Pulse e	76	88	104	72	88	80	104	88	80	88	84	80	84	84	84	84	88	84	84	76			Pulse e
Resp. m	14	16	16	14	16	16	14	16	16	16	20	16	18	18	16	16	16	16	16	18	16		Resp m
Resp. e	16	16	18	16	18	18	20	20	18	14	18	16	18	18	18	18	18	18	18	20	16		Resp e
Motions.																							Motions.
Urine, ozs.																							Urine, ozs.

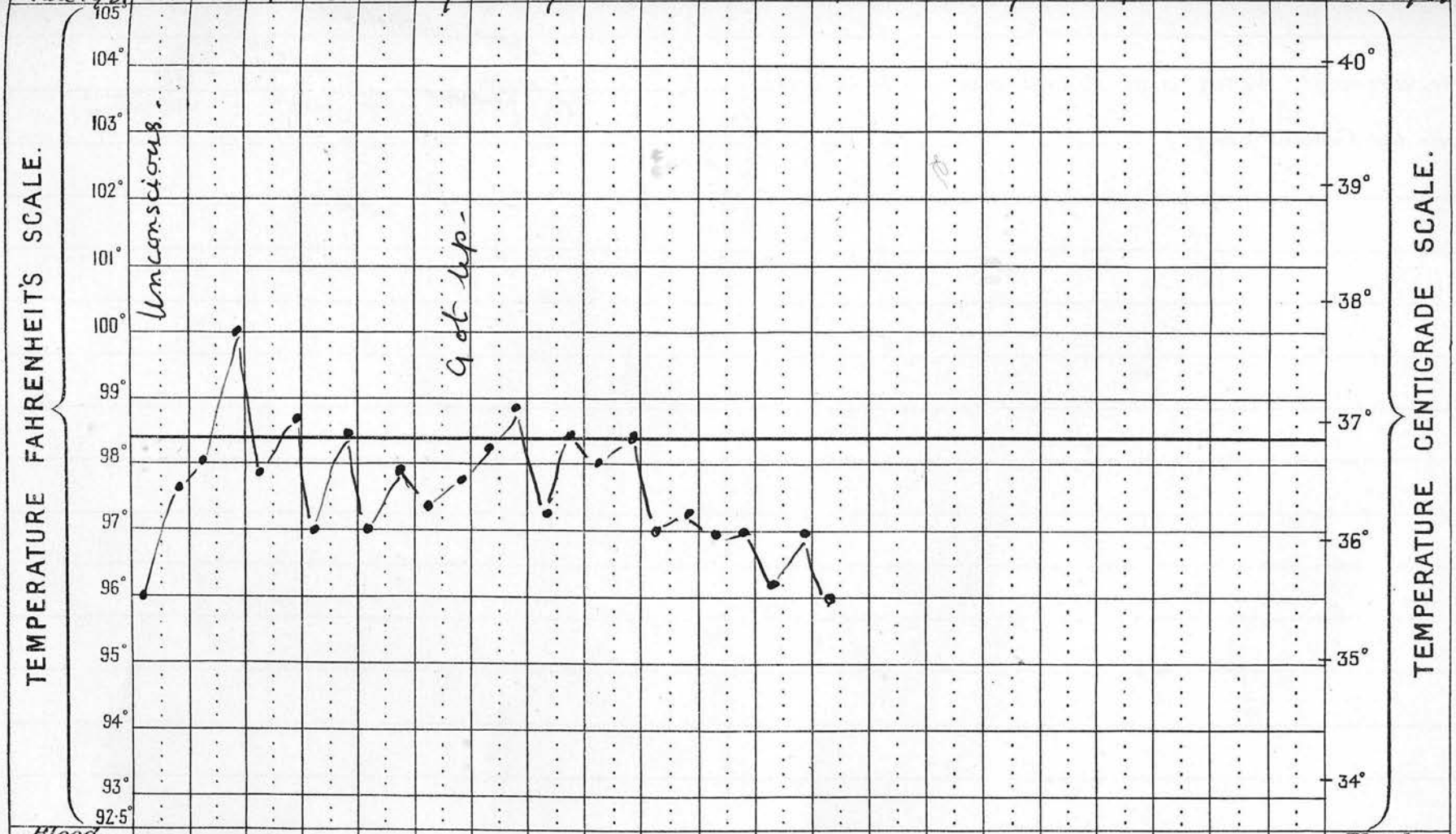
1 M—c.—8. 32. —12. 32.


Jan. 1933
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
1
2
3
4
Feb. 1933
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Blood Pressure.
124/76.
Blood Pressure
Pulse m
84 92 92 76 76 80 84 76 72 86 68 64 54 64 76 72 76 72 76 58 78
Pulse e
84 84 88 72 80 76 64 68 76 74 72 76 80 64 64 84 84 60 84 80 60.
Resp. m
16 18 16 18 18 16 14 16 14 16 14 16 14 16 20 20 16 16 16 18 16
Resp e
16 16 16 16 16 18 16 16 16 16 16 16 16 26 26 20 20 18 14 14 12
Motions.
Urine, ozs.

1 M—c.—8. 32. —12. 32.


July 1930
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
July 193
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
3rd week of illness.
Cerebral Haemorrhage.
Died -
Blood Pressure.
Pulse m 92 96 96 92 88 104 108 100 100 80
Pulse & 94 108 88 88 96 100 100 96 100 86.
Resp. m
Resp. &
Motions.
Urine, ozs.
Blood Pressure
Pulse m
Pulse &
Resp m
Resp &
Motions.
Urine, ozs.

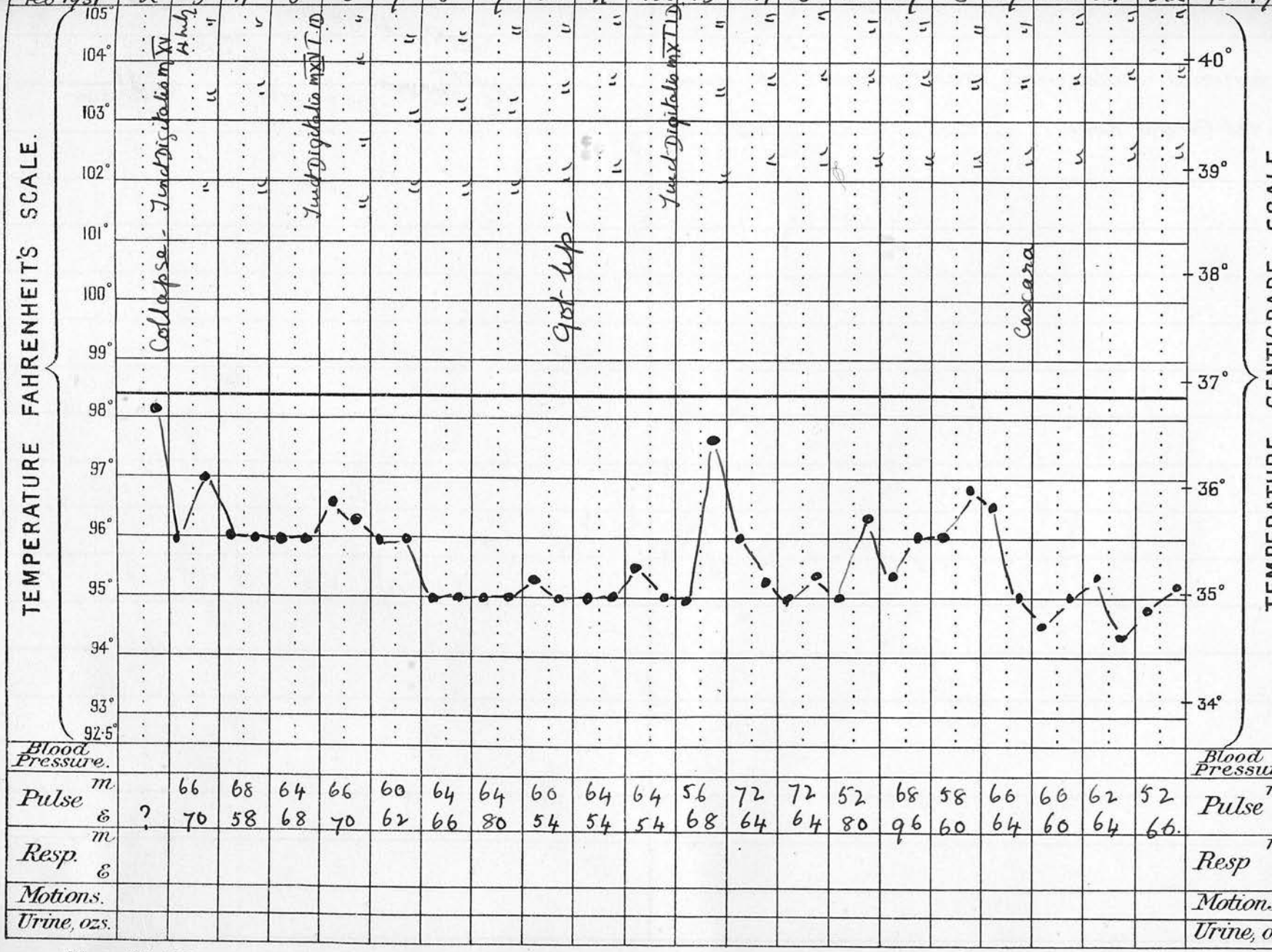
500—c.—1 32.—8. 32.



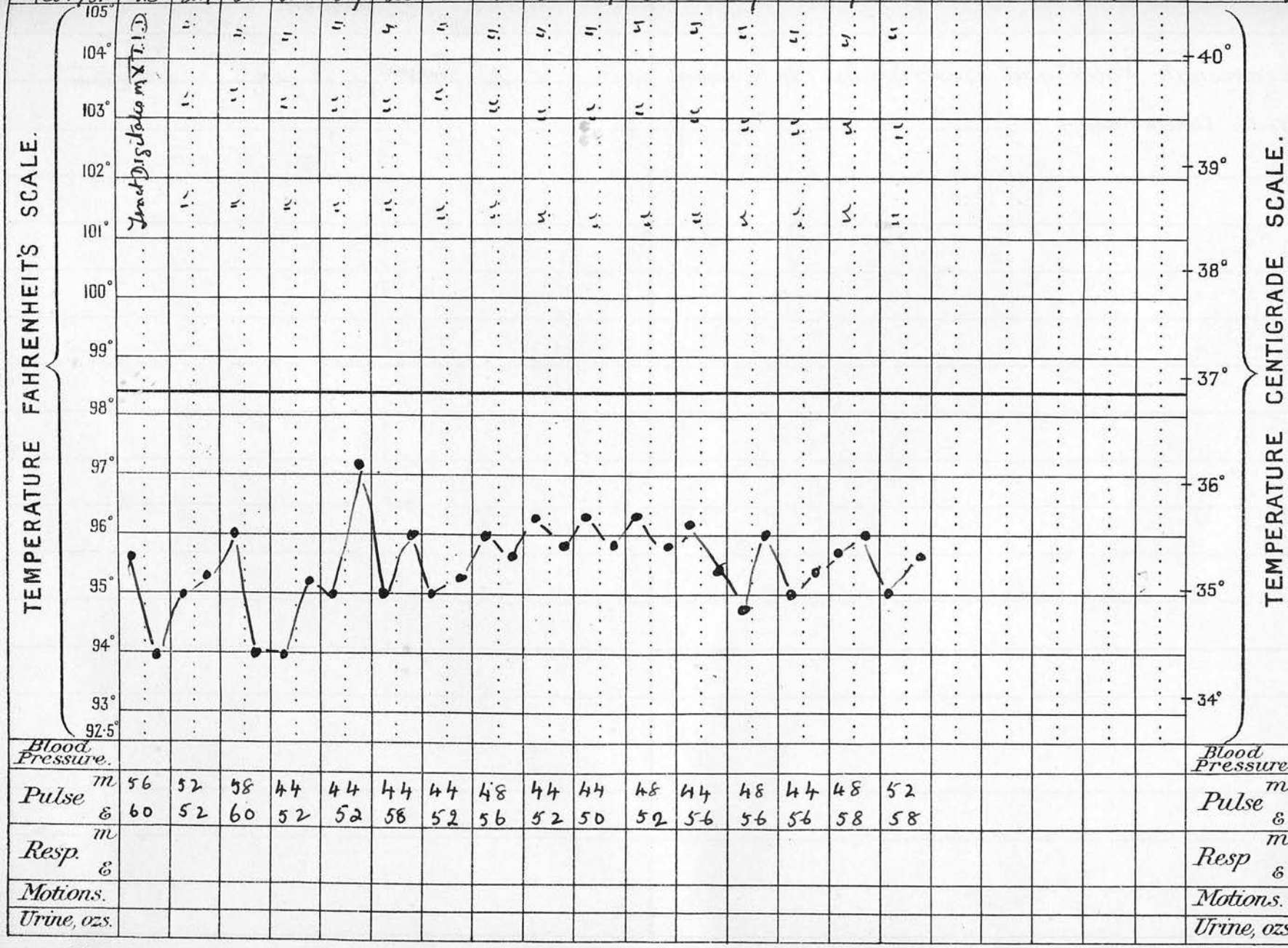
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Blood Pressure.																						
Pulse	m	120	92	88	88	80	76	*2	72	92	68	64	64	64								
	&	126	98	84	88	84	80	88	84	74	76	68	64									
Resp.	m																					
	&																					
Motions.																						
Urine, ozs.																						

Blood Pressure
Pulse m &
Resp m &
Motions.
Urine, ozs.

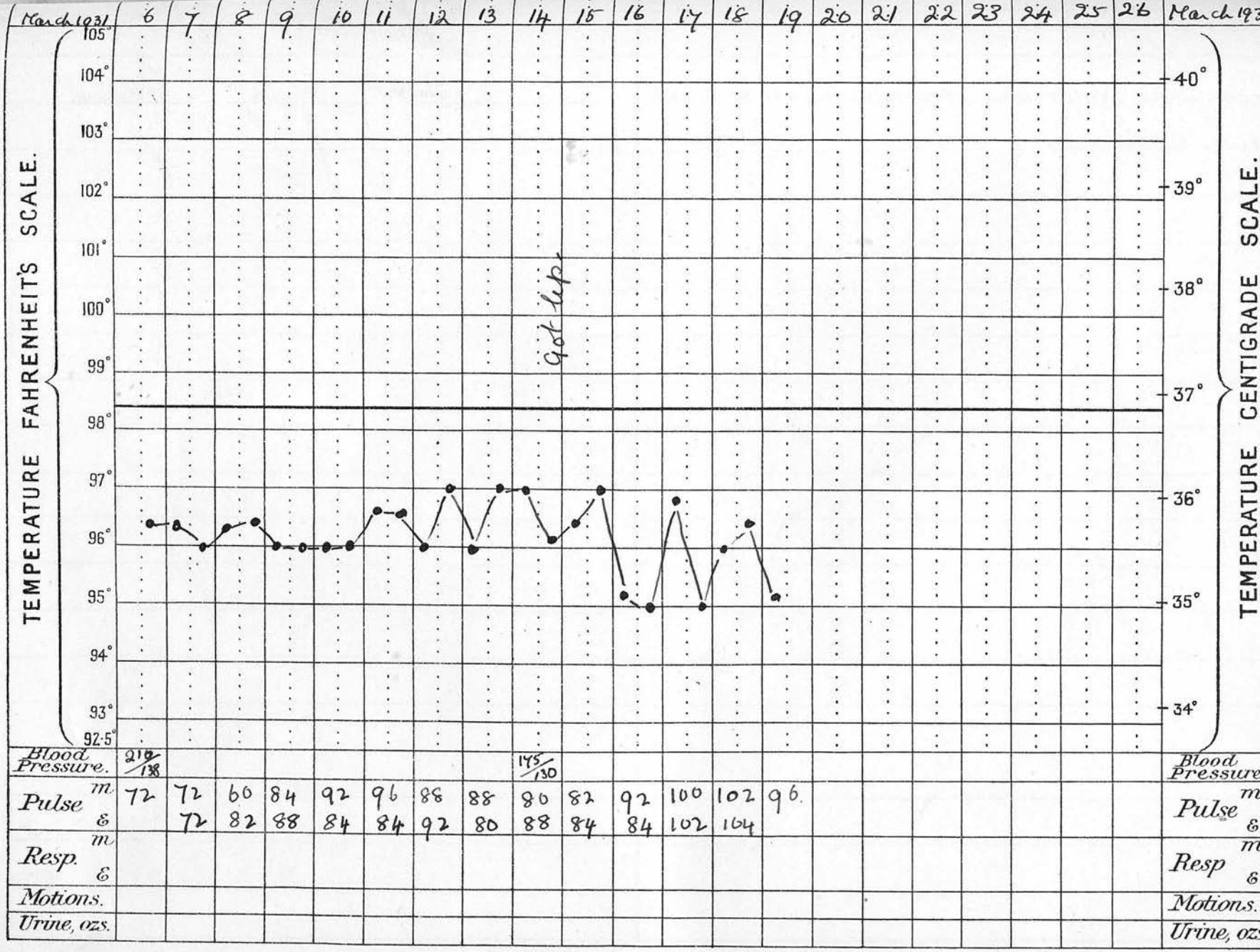
500—c.—1 32.—8. 32.


Feb 1931
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
Feb 1931
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
Collapse - Tinct Digitalis mxv 4 hrly
Tinct Digitalis mxv T.D.
Got up -
Tinct Digitalis mxv T.D.
Cascara
Blood Pressure.
Pulse m 66 68 64 66 60 64 64 60 64 64 56 72 72 52 68 58 66 60 62 52
Pulse & ? 70 58 68 70 62 66 80 54 54 54 68 64 64 80 96 60 64 60 64 66.
Resp. m &
Motions.
Urine, ozs.
Blood Pressure
Pulse m &
Resp m &
Motions.
Urine, ozs.

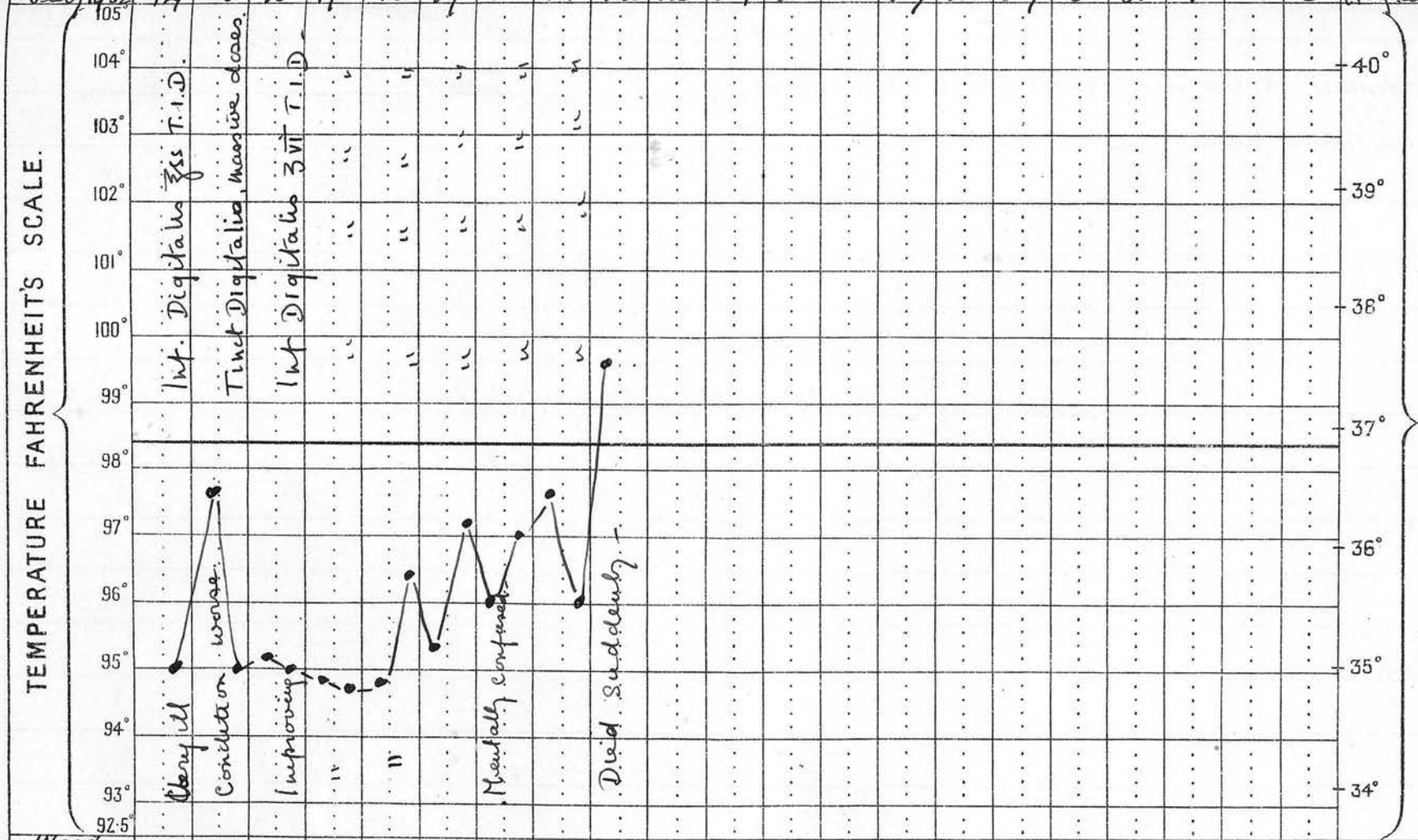
500—c.—1 32.—8. 32.


Feb 1931
23
24
25
26
27
28
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
March
Admitted with T.I.D.
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Blood Pressure.
Pulse m 56 52 58 44 44 44 44 48 44 44 48 44 48 44 48 52
Pulse e 60 52 60 52 52 58 52 56 52 50 52 56 56 56 58 58
Resp. m
Resp. e
Motions.
Urine, ozs.

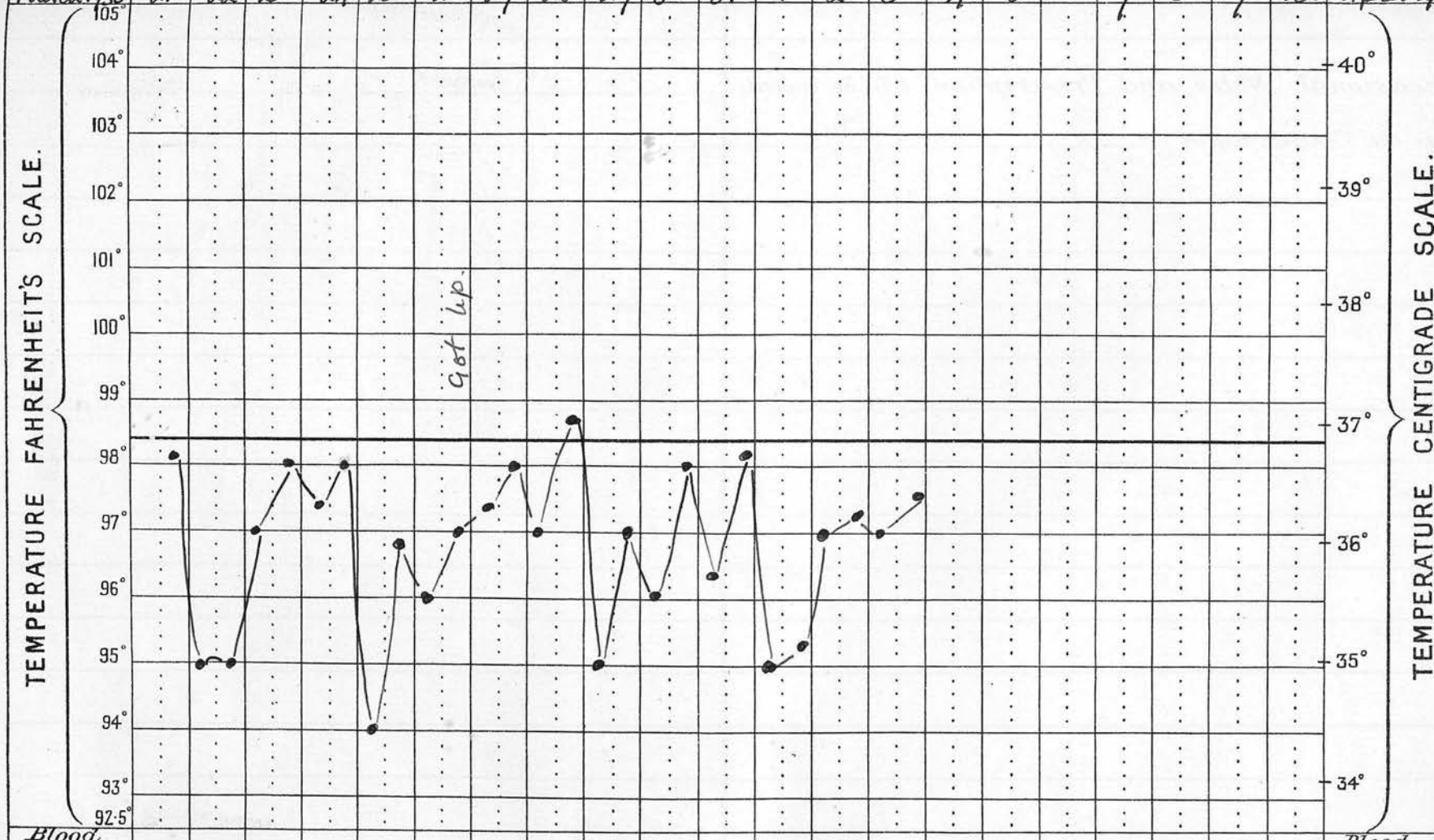
500—c.—1 32.—8. 32.


March 1931
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
March 193
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
Got up.
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
Blood Pressure. 210/138 145/130
Pulse m 72 72 60 84 92 96 88 88 80 82 92 100 102 96
Pulse & 72 82 88 84 84 92 80 88 84 84 102 164
Resp. m
Resp. &
Motions.
Urine, ozs.

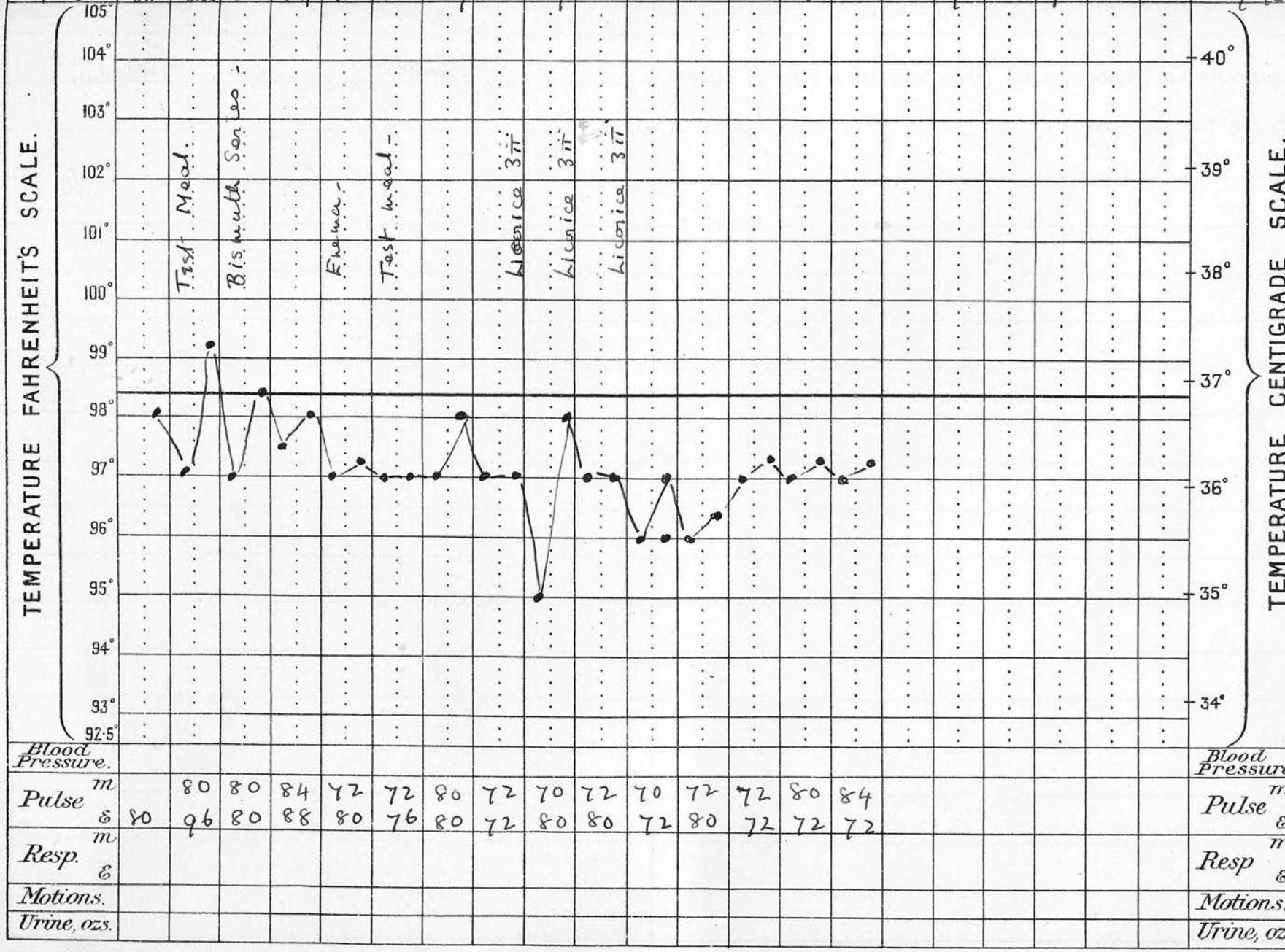
500—c.—1 32.—8. 32.


July 1932
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
1
2
3
August
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Int. Digitalis ℥ss T.I.D.
Tinct Digitalis, massive doses.
Int Digitalis 3vii T.I.D.
Very ill
Condition worse.
Improving
Manually confused
Died Suddenly -
Blood Pressure.
Pulse m
Pulse &
120?
88? 92?
94? 100?
96? 76?
100 100?
92 88
84 100?
84? 100?
92?
Resp. m
Resp. &
28
32 32
36 40
34 82
36 32
26 30
28 30
22 28
34.
Motions.
Urine, ozs.

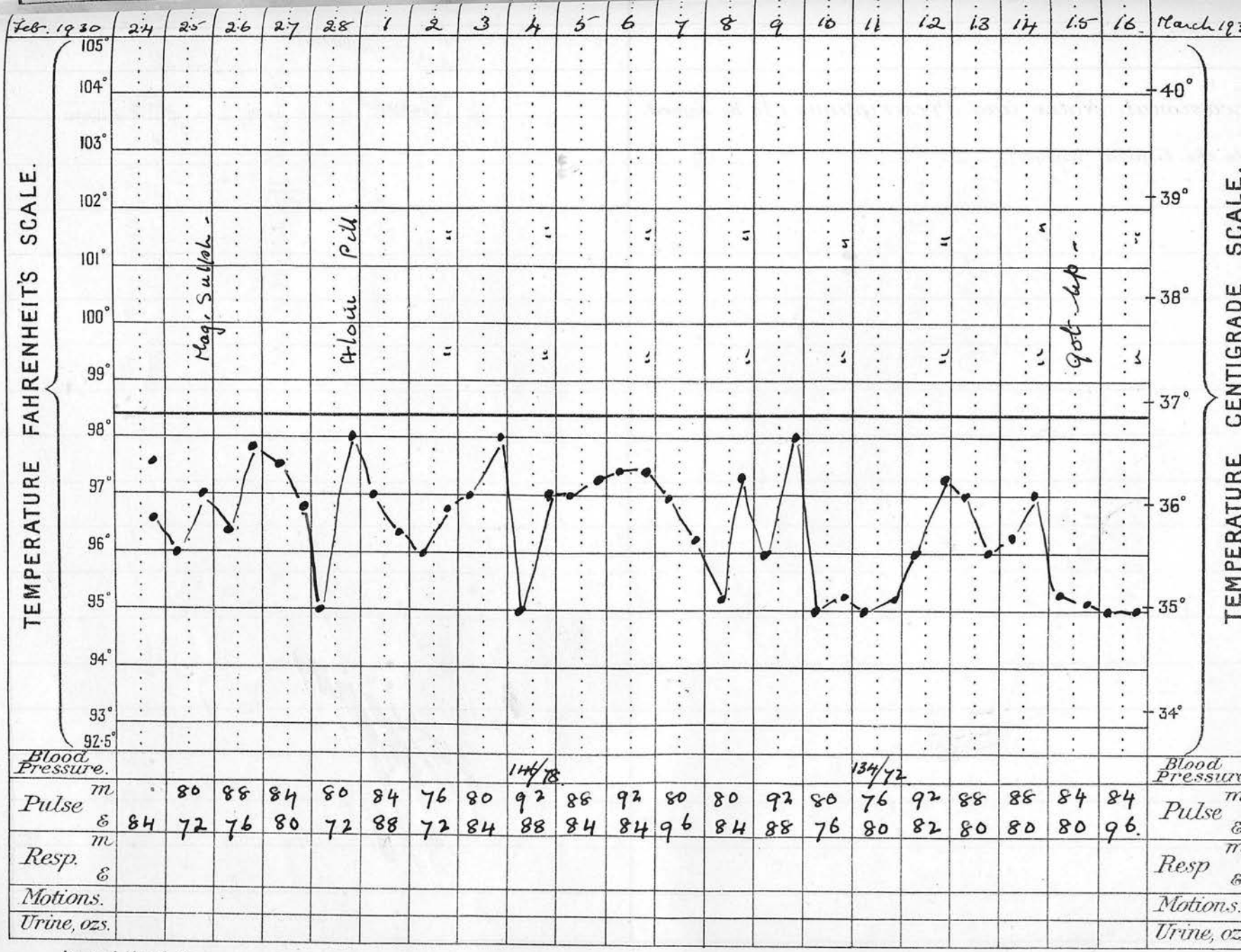
500—c.—1 32.—8. 32.


March 1930
21
22
23
24
25
26
27
28
29
30
31
1
2
3
4
6
6
7
8
9
10
April 19
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
Got up.
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Blood Pressure.
Pulse m
Pulse &
Resp. m
Resp. &
Motions.
Urine, ozs.
72 84 76 76 72 84 96 74 80 88 84 80 84
68 68 76 80 80 80 76 84 80 80 82 76 80 80
Blood Pressure
Pulse m
Pulse &
Resp m
Resp &
Motions.
Urine, oz

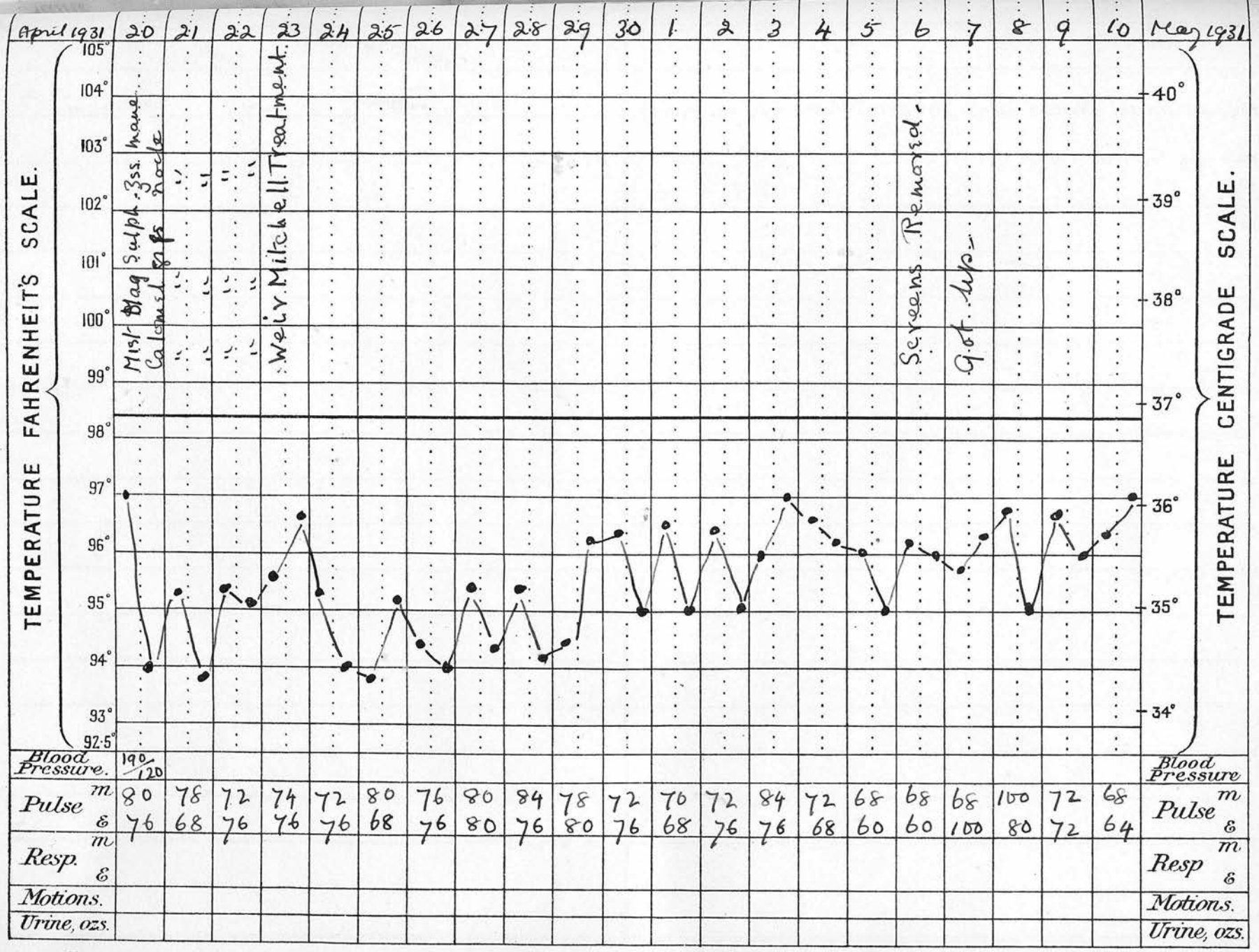
500—c.—1 32.—8. 32.


April
21
22
23
24
25
26
27
28
29
30
1
2
3
4
5
6
7
8
9
10
11
May 193
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Test Meal.
Bismuth Sonde.
Enema.
Test meal.
Licorice 3ii
Licorice 3ii
Licorice 3ii
Blood Pressure.
Pulse m
80 80 84 72 72 80 72 70 72 70 72 72 80 84
Pulse &
80 96 80 88 80 76 80 72 80 80 72 80 72 72 72
Resp. m
Resp. &
Motions.
Urine, ozs.

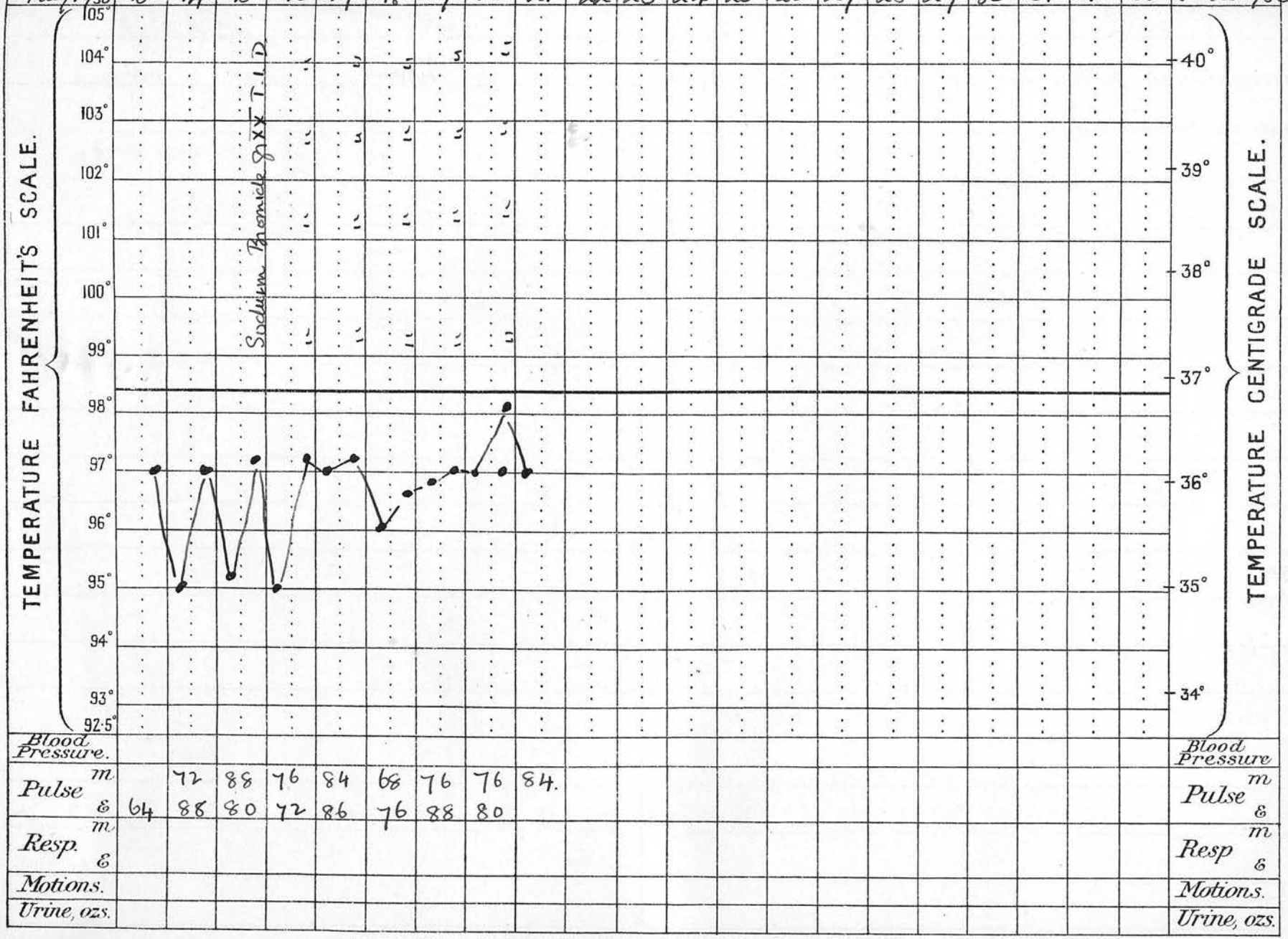
500—c.—1 32.—8. 32.


Feb. 1930
24
25
26
27
28
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
March 193
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
40°
39°
38°
37°
36°
35°
34°
TEMPERATURE CENTIGRADE SCALE.
Mag. Sulph.
Aloin Pill
Gout rep.
Blood Pressure.
144/78
134/72
Pulse m 80 88 84 80 84 76 80 92 88 92 80 80 92 80 76 92 88 88 84 84
Pulse & 84 72 76 80 72 88 72 84 88 84 84 96 84 88 76 80 82 80 80 80 96
Resp. m
Resp. &
Motions.
Urine, ozs.

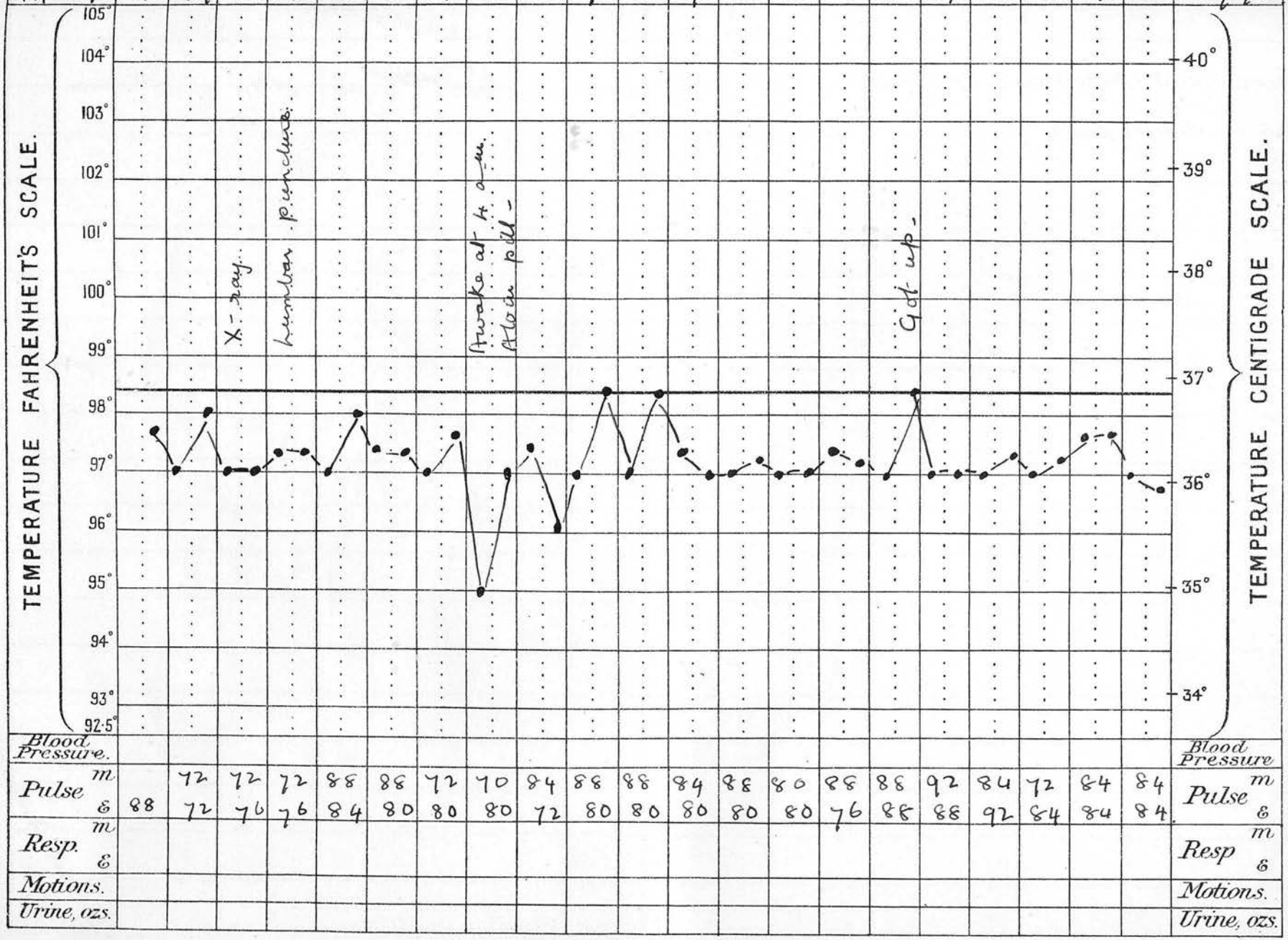
1M—C.—8. 32. —12. 32.


April 1931
20
21
22
23
24
25
26
27
28
29
30
1
2
3
4
5
6
7
8
9
10
May 1931
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Mist Mag Sulph 3ss. mane
Calomel gr 5 "
Weir Mitchell Treatment.
Screens Removed.
Got up.
Blood Pressure.
190/120
Pulse m 80 78 72 74 72 80 76 80 84 78 72 70 72 84 72 68 68 68 100 72 68
Pulse & 76 68 76 76 76 68 76 80 76 80 76 68 76 76 68 60 60 100 80 72 64
Resp. m
Resp. &
Motions.
Urine, ozs.

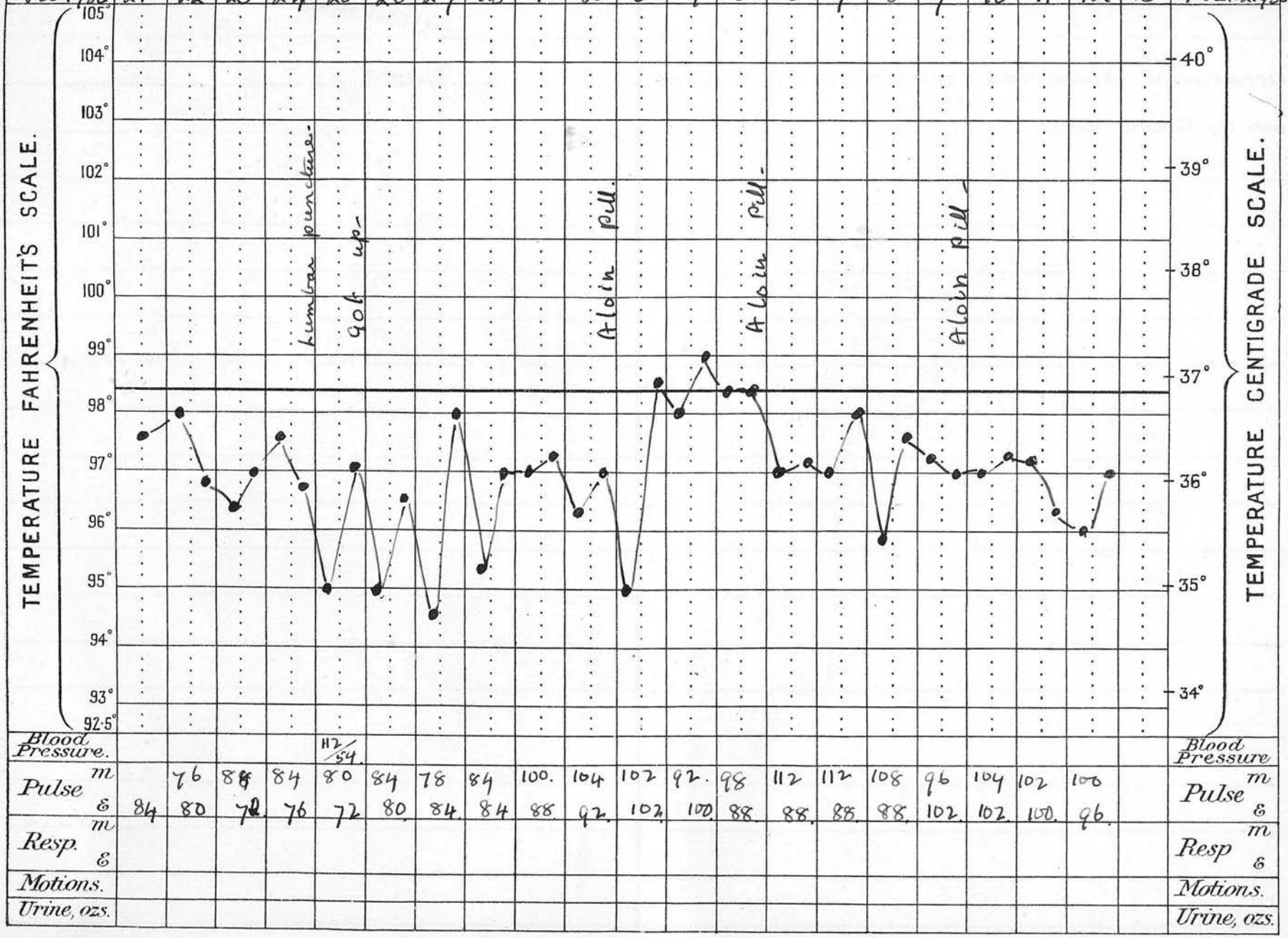
500—c.—1 32.—8. 32.


May 1930
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
1
2
June 1930
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
Sodium Bromide gr XX T.I.D.
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Blood Pressure.
Pulse m
Pulse &
64
72 88
88 80
76 72
84 86
68 76
76 88
76 80
84.
Resp. m
Resp &
Motions.
Urine, ozs.

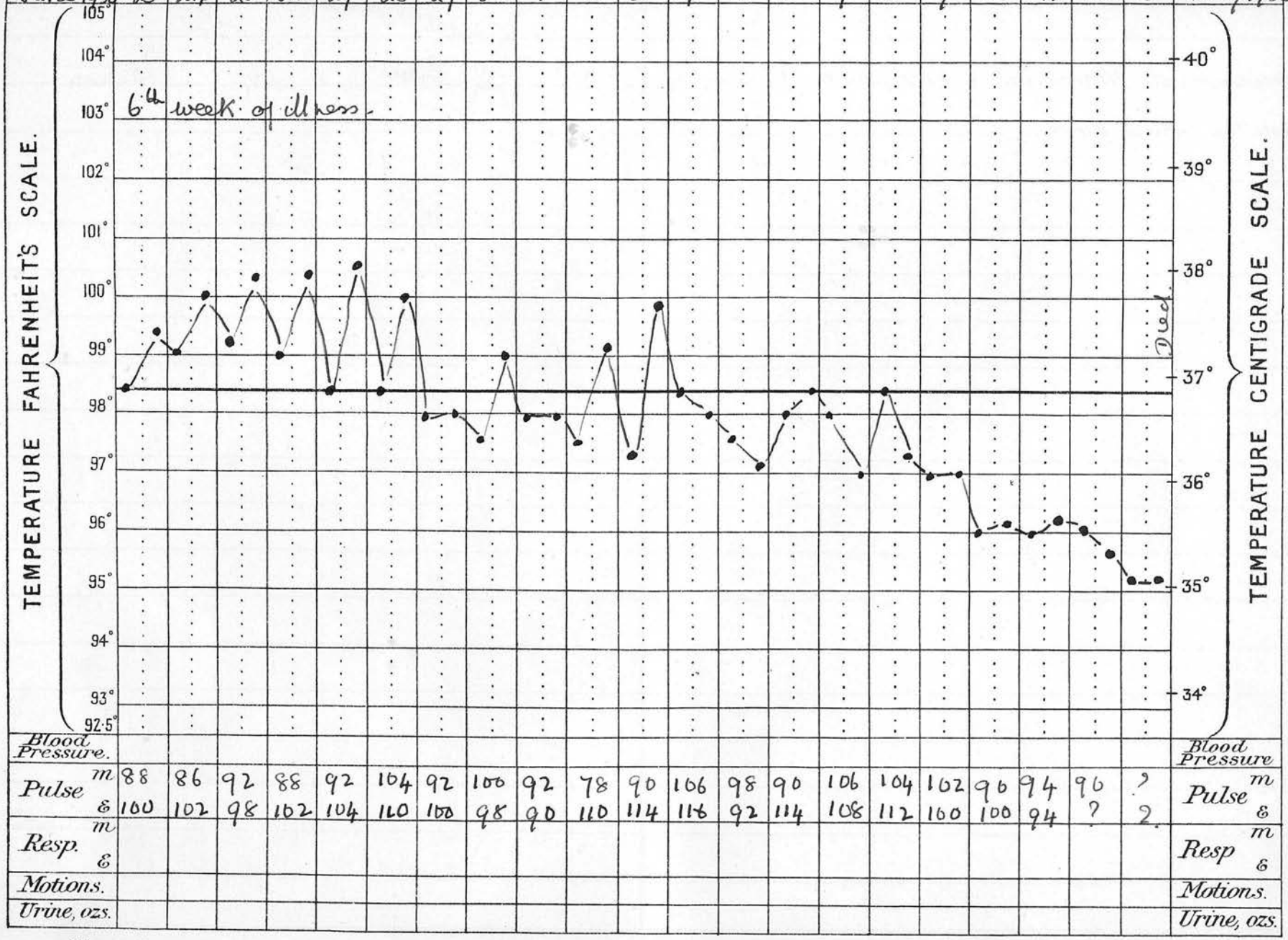
500—c.—1 32.—8. 32.


April 1930
28
29
30
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
May 1930
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
X-ray.
Lumbar p. punct.
Awake at 4 a.m.
Also p.d.l.
Got up.
Blood Pressure.
Pulse m
Pulse &
Resp. m
Resp &
Motions.
Urine, ozs.
88
72 72 72 88 88 72 70 84 88 88 84 88 80 88 88 92 84 72 84 84
72 76 76 84 80 80 80 72 80 80 80 80 80 76 88 88 92 84 84 84

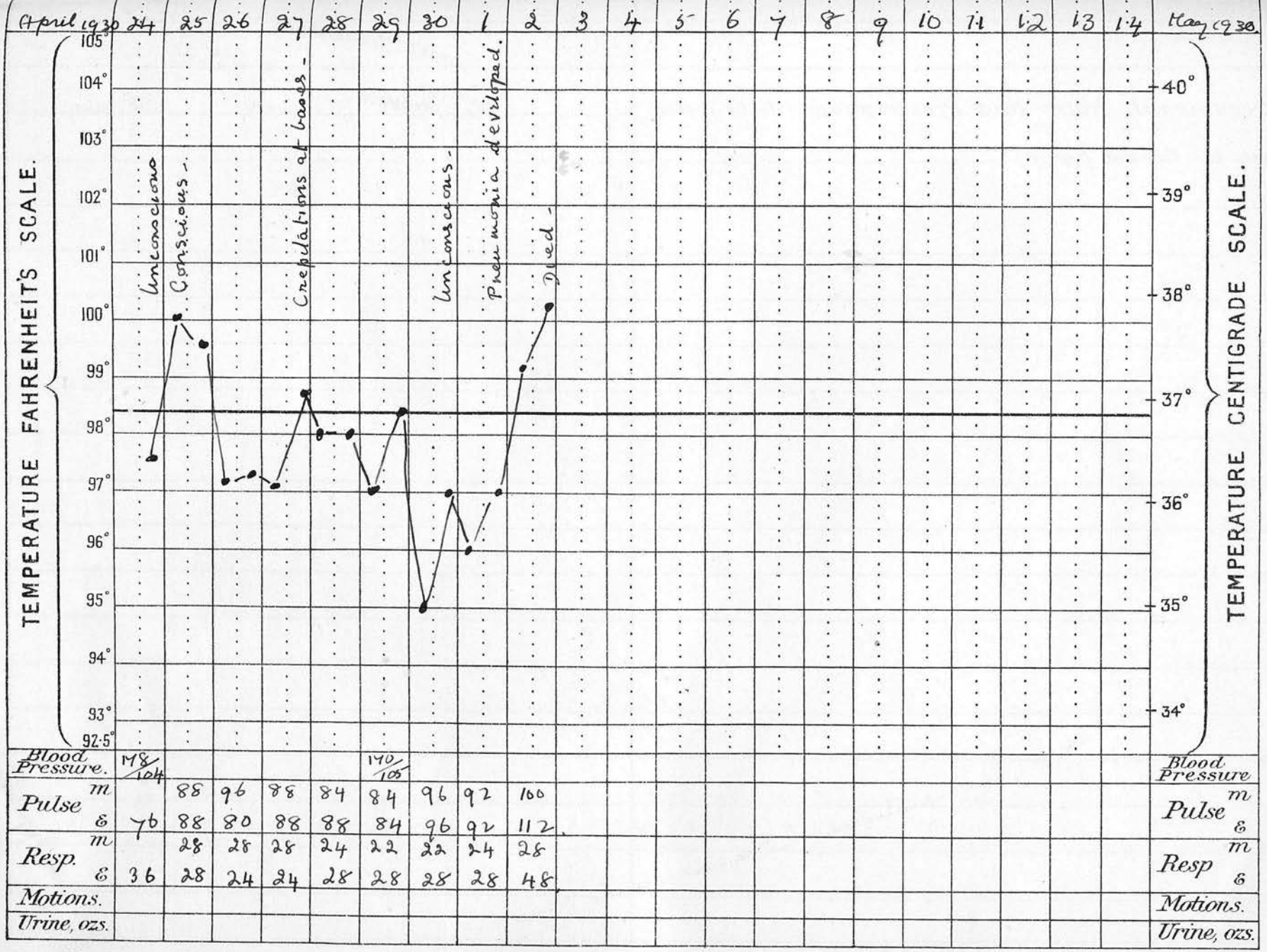
500—c.—1 32.—8. 32.


Feb 1930
21
22
23
24
25
26
27
28
1
2
3
4
5
6
7
8
9
10
11
12
13
March 1930
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
lumbar puncture.
got up.
Aloin pill.
Aloin pill.
Aloin pill.
Blood Pressure.
112/54
Pulse m
Pulse &
76 88 84 80 84 78 84 100. 104 102 92. 98 112 112 108 96 104 102 100
84 80 72. 76 72 80. 84. 84 88 92. 102 100 88. 88. 88. 88. 102. 102. 100. 96.
Resp. m
Resp. &
Motions.
Urine, ozs.

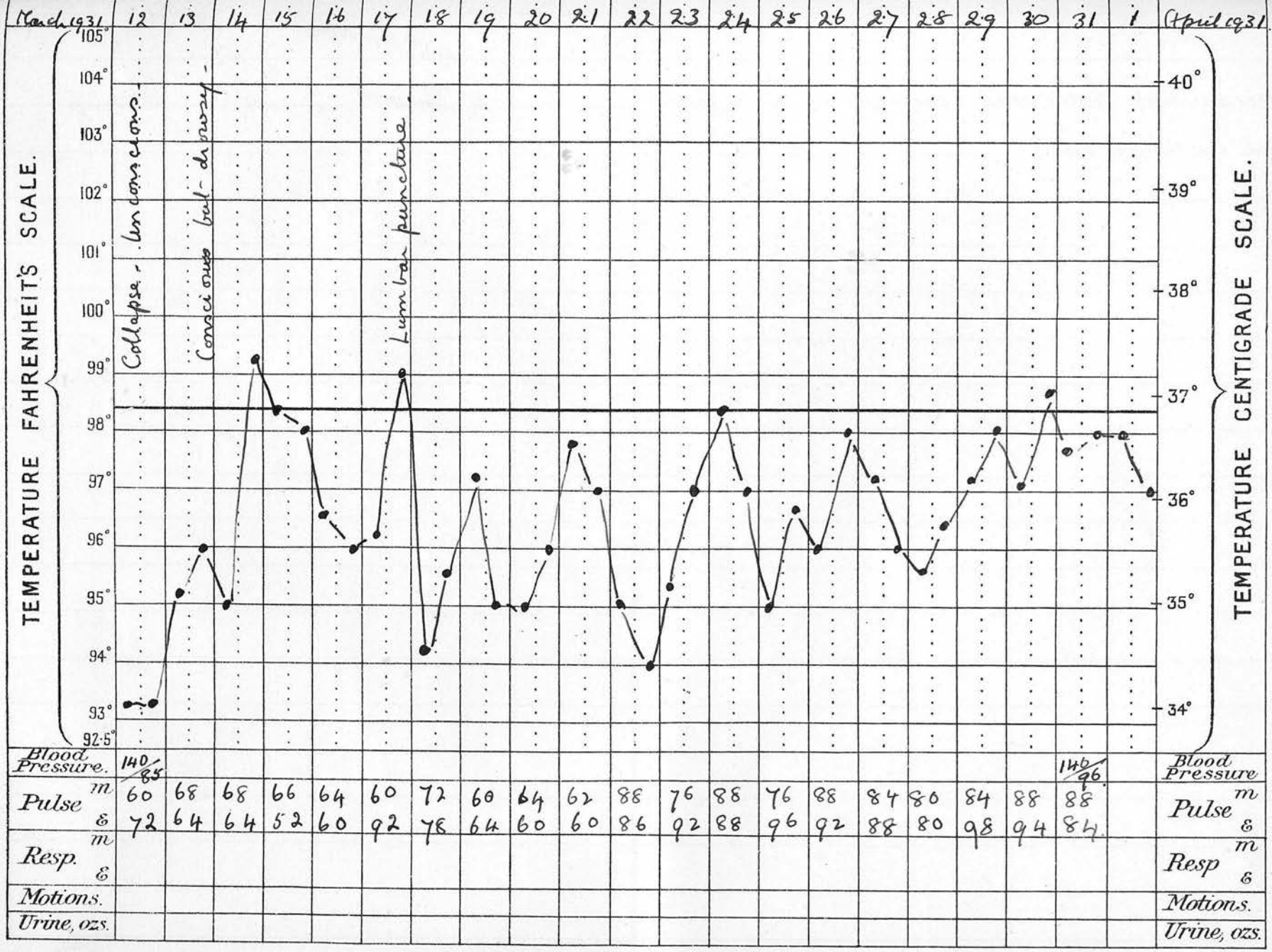
500—c.—1 32.—8. 32.


June 1930
23 24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9 10 11 12 13
July 1930
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
6th week of illness.
Died.
Blood Pressure.
Pulse m 88 86 92 88 92 104 92 100 92 78 90 106 98 90 106 104 102 96 94 96 ?
Pulse & 100 102 98 102 104 110 100 98 90 110 114 116 92 114 108 112 100 100 94 ? ?
Resp. m
Resp. &
Motions.
Urine, ozs.
Blood Pressure
Pulse m
Pulse &
Resp m
Resp &
Motions.
Urine, ozs.

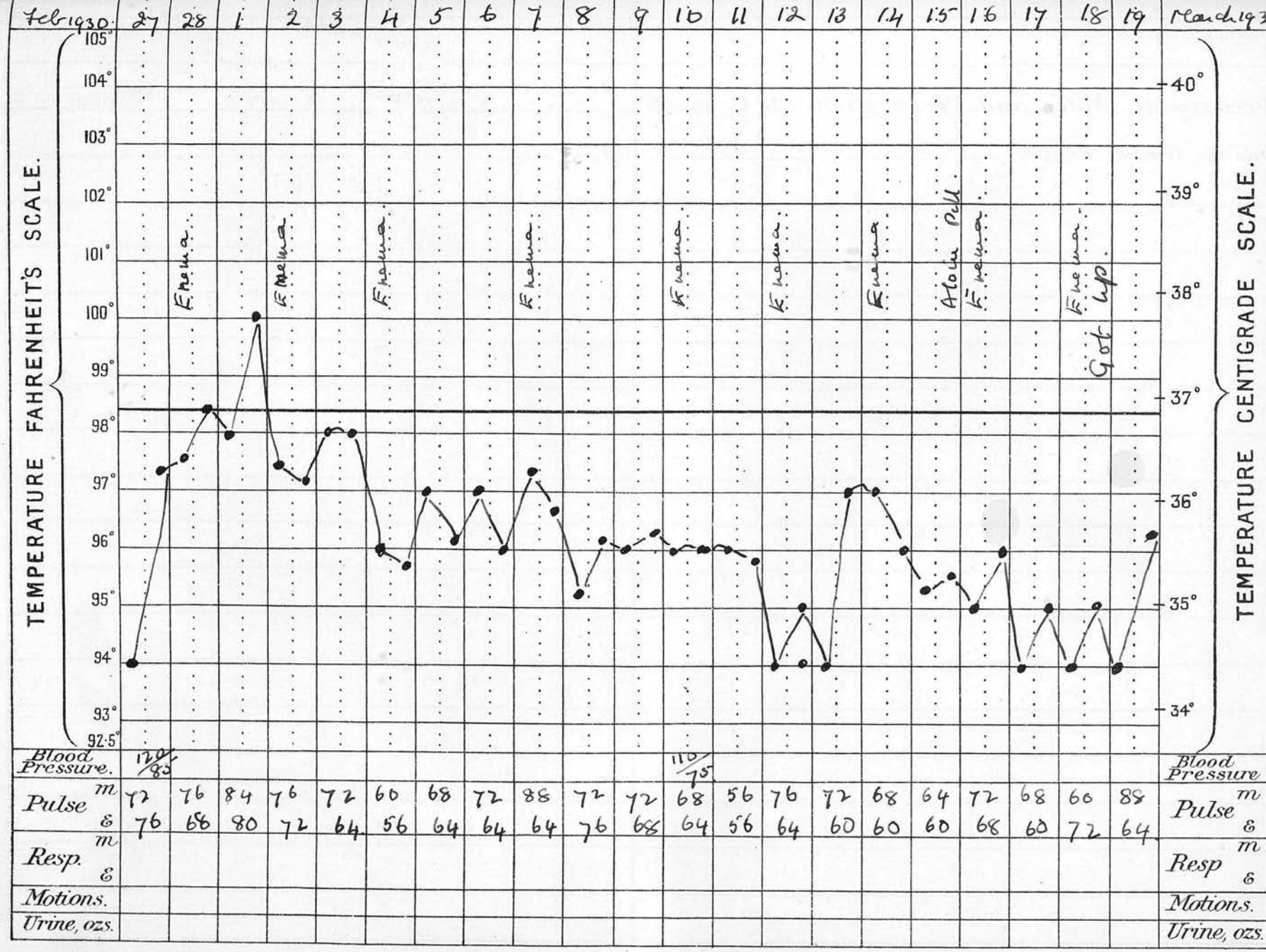
500—c.—1 32.—8. 32.


April 1930
24
25
26
27
28
29
30
1
2
3
4
5
6
7
8
9
10
11
12
13
14
May 1930
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Unconscious
Conscious -
Crepitations at bases -
Unconscious -
Pneumonia developed.
Died -
Blood Pressure.
178/104
170/105
Pulse m
88 96 88 84 84 96 92 100
Pulse &
76 88 80 88 88 84 96 92 112
Resp. m
28 28 28 24 22 22 24 28
Resp. &
36 28 24 24 28 28 28 28 48
Motions.
Urine, ozs.

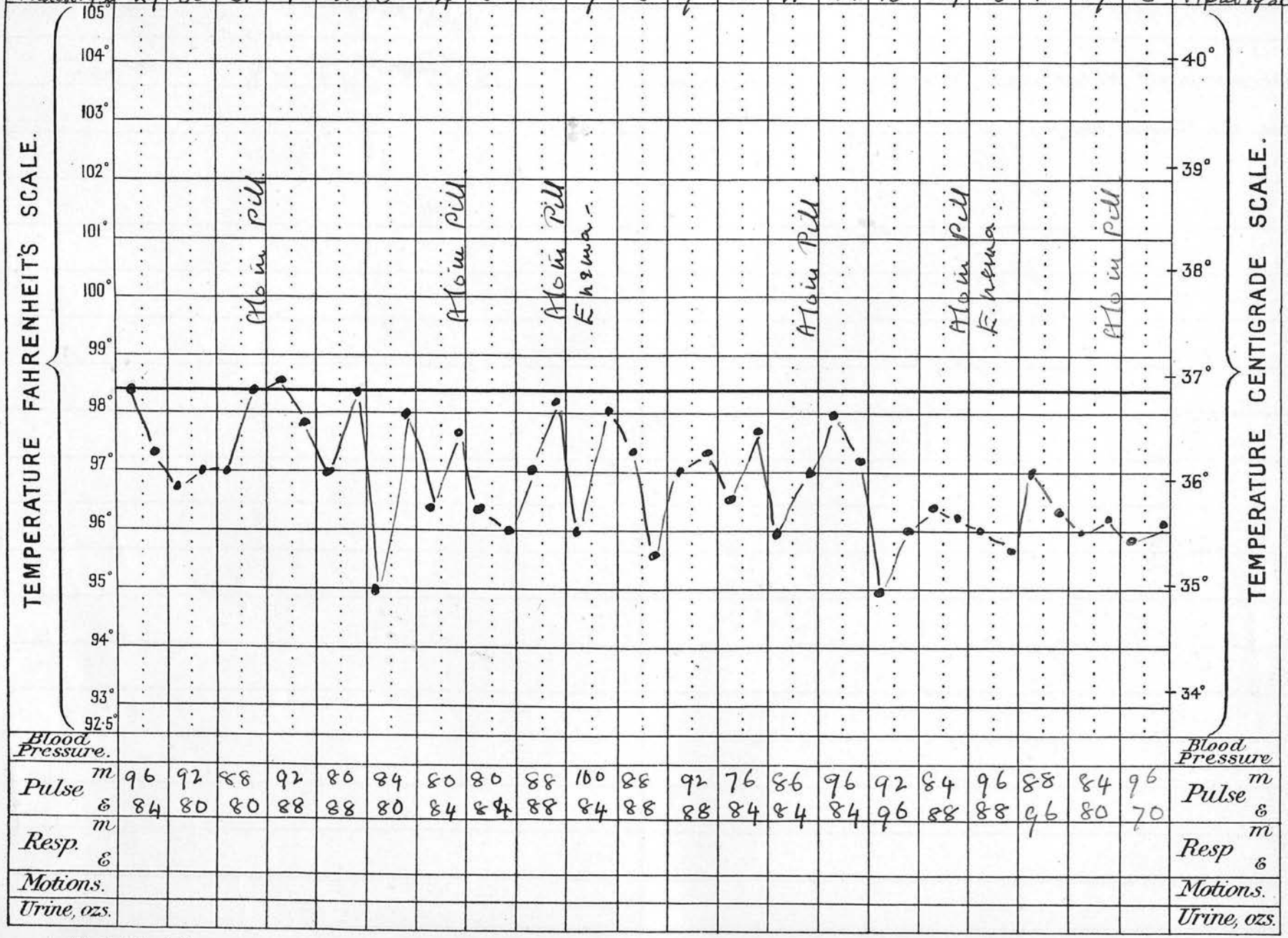
500—c.—1 32.—8. 32.


March 1931
12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1
April 1931
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
Collapse - Unconscious -
Conscious but drowsy -
Lumbar puncture.
Blood Pressure. 140/85 146/96
Pulse m 60 68 68 66 64 60 72 60 64 62 88 76 88 76 88 84 80 84 88 88
Pulse & 72 64 64 52 60 92 78 64 60 60 86 92 88 96 92 88 80 98 94 84
Resp. m
Resp. &
Motions.
Urine, ozs.

500—c.—1 32.—8. 32.


Feb 1930
27 28 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
March 1930
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
E. Malaria.
E. Malaria.
E. Malaria.
E. Malaria.
E. Malaria.
E. Malaria.
Atabrin Pill.
E. Malaria.
E. Malaria. Got up.
Blood Pressure. 120/85 110/75
Pulse m 72 76 84 76 72 60 68 72 88 72 72 68 56 76 72 68 64 72 68 60 88
Pulse & 76 68 80 72 64 56 64 64 64 76 68 64 56 64 60 60 60 68 60 72 64
Resp. m
Resp. &
Motions.
Urine, ozs.

500—c.—1 32.—8. 32.


March 1930
29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
April 1930
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
Atoin pill.
Atoin pill
Atoin pill
Enema.
Atoin Pill.
Atoin Pill
Enema.
Atoin pill
Blood Pressure.
Pulse m 96 92 88 92 80 84 80 80 88 100 88 92 76 86 96 92 84 96 88 84 96
Pulse & 84 80 80 88 88 80 84 84 88 84 88 88 84 84 84 96 88 88 96 80 70
Resp. m
Resp. &
Motions.
Urine, ozs.
Blood Pressure
Pulse m
Pulse &
Resp m
Resp &
Motions.
Urine, ozs.

500—c.—1 32.—8. 32.

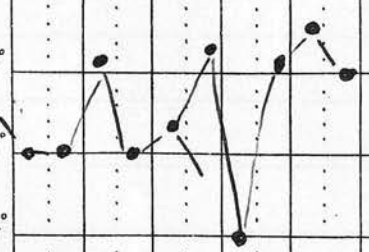
April 1930 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30

TEMPERATURE FAHRENHEIT'S SCALE.

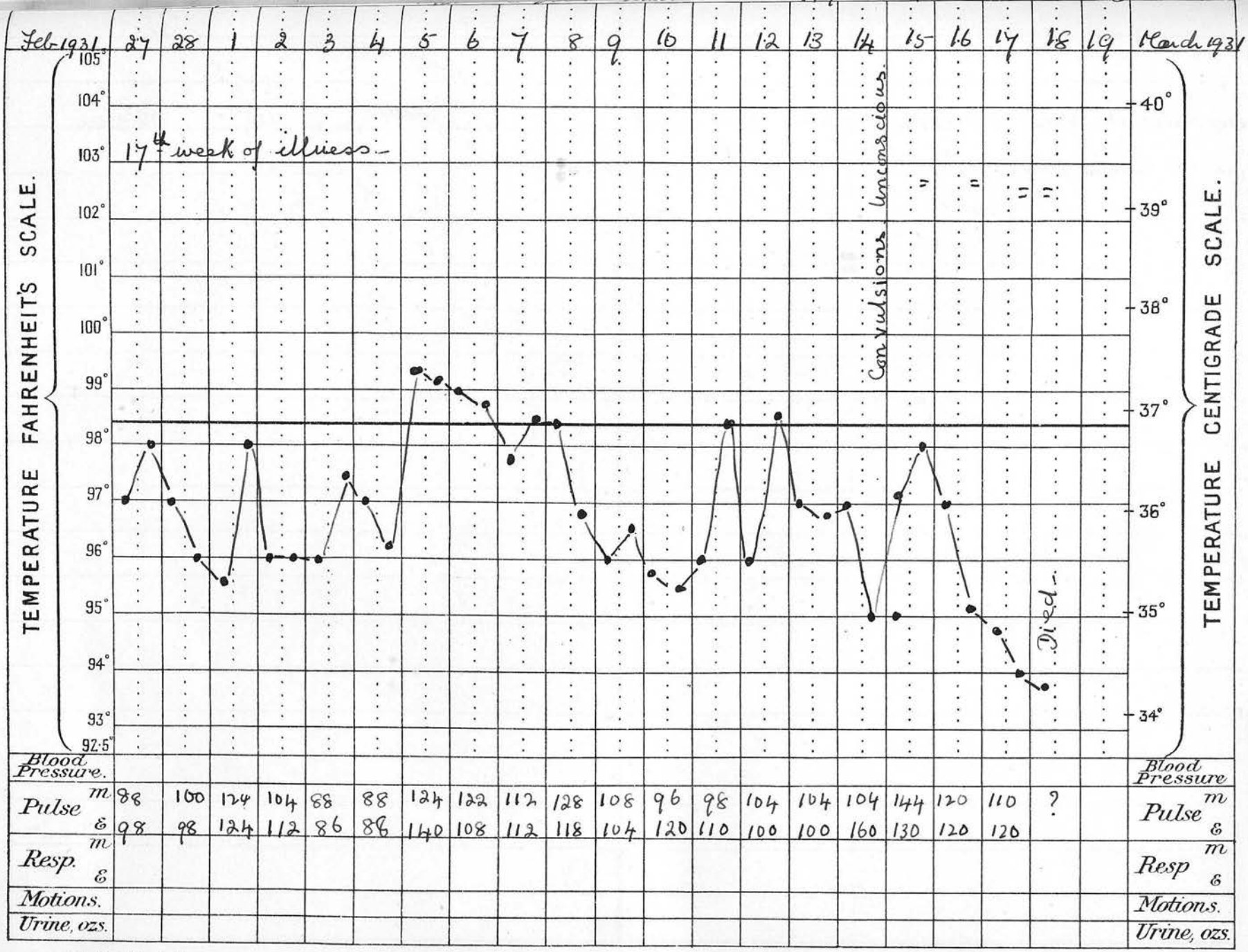
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°

TEMPERATURE CENTIGRADE SCALE.

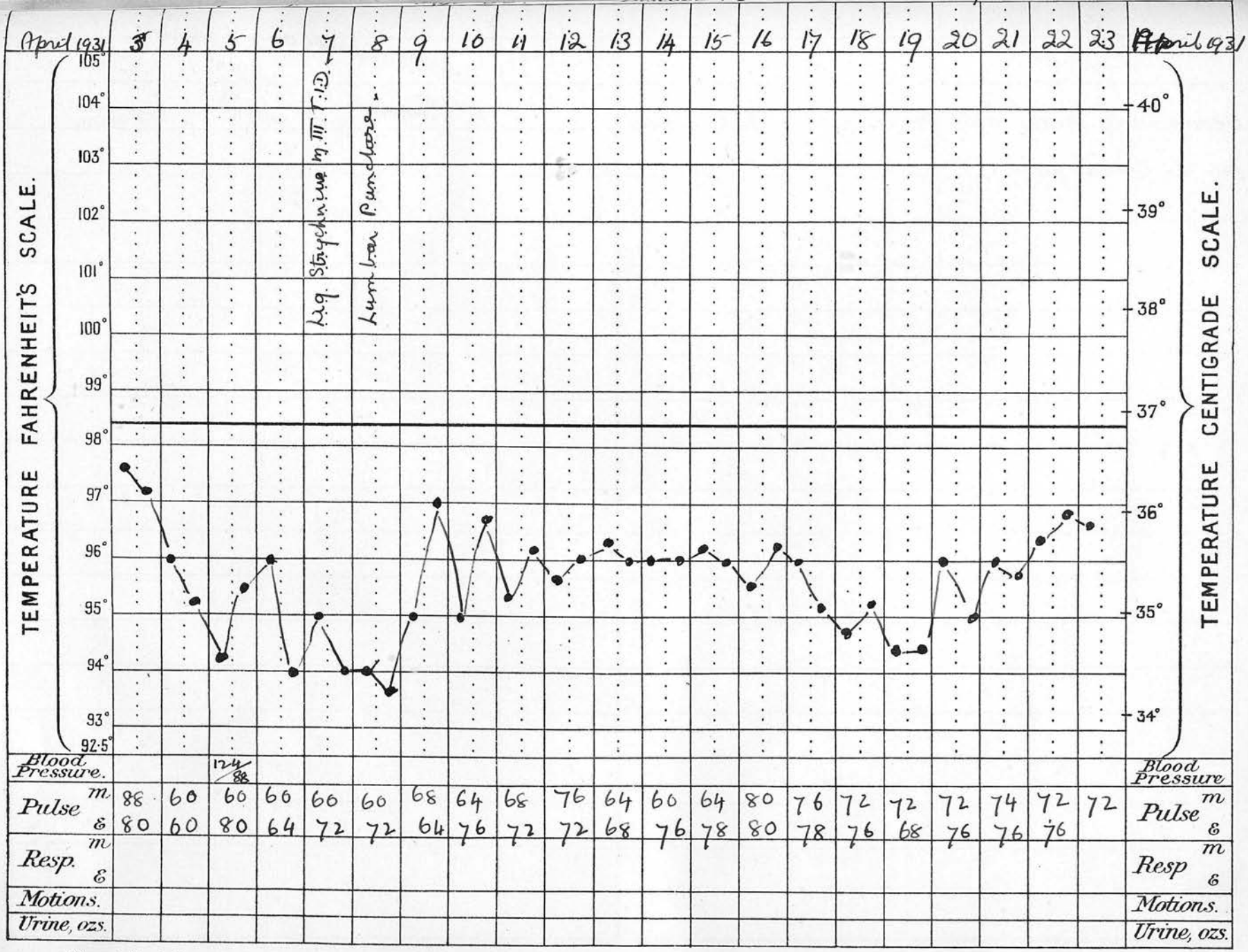
40° 39° 38° 37° 36° 35° 34°



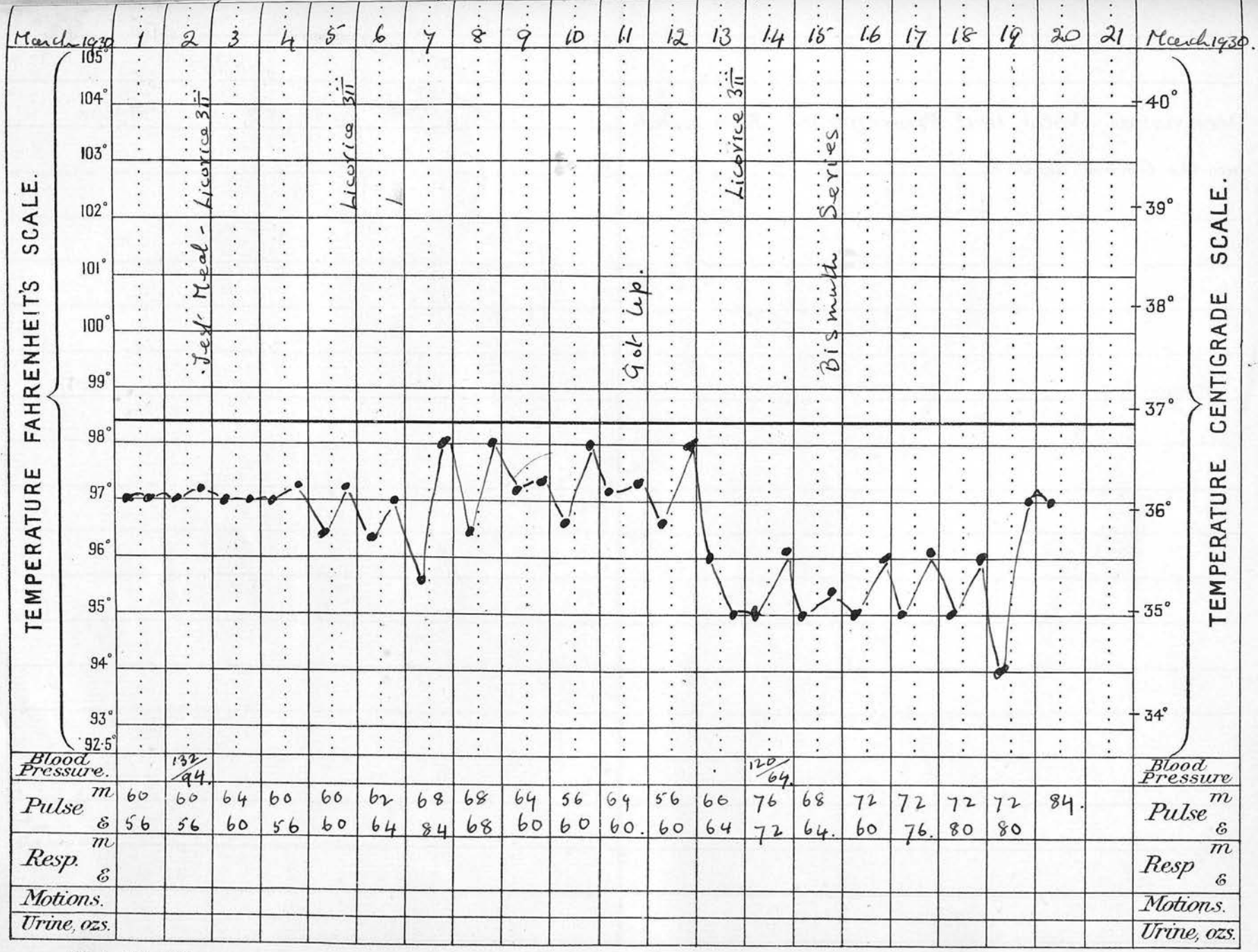
| | | |


Feb 1931
27
28
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
March 1931
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
17th week of illness.
Convulsions. Unconscious
"
"
"
Died.
Blood Pressure.
Pulse m 88 100 124 104 88 88 124 122 112 128 108 96 98 104 104 104 144 120 110 ? Pulse m
Pulse & 98 98 124 112 86 86 140 108 112 118 104 120 110 100 100 160 130 120 120 Pulse &
Resp. m Resp m
Resp. & Resp &
Motions. Motions.
Urine, ozs. Urine, ozs.

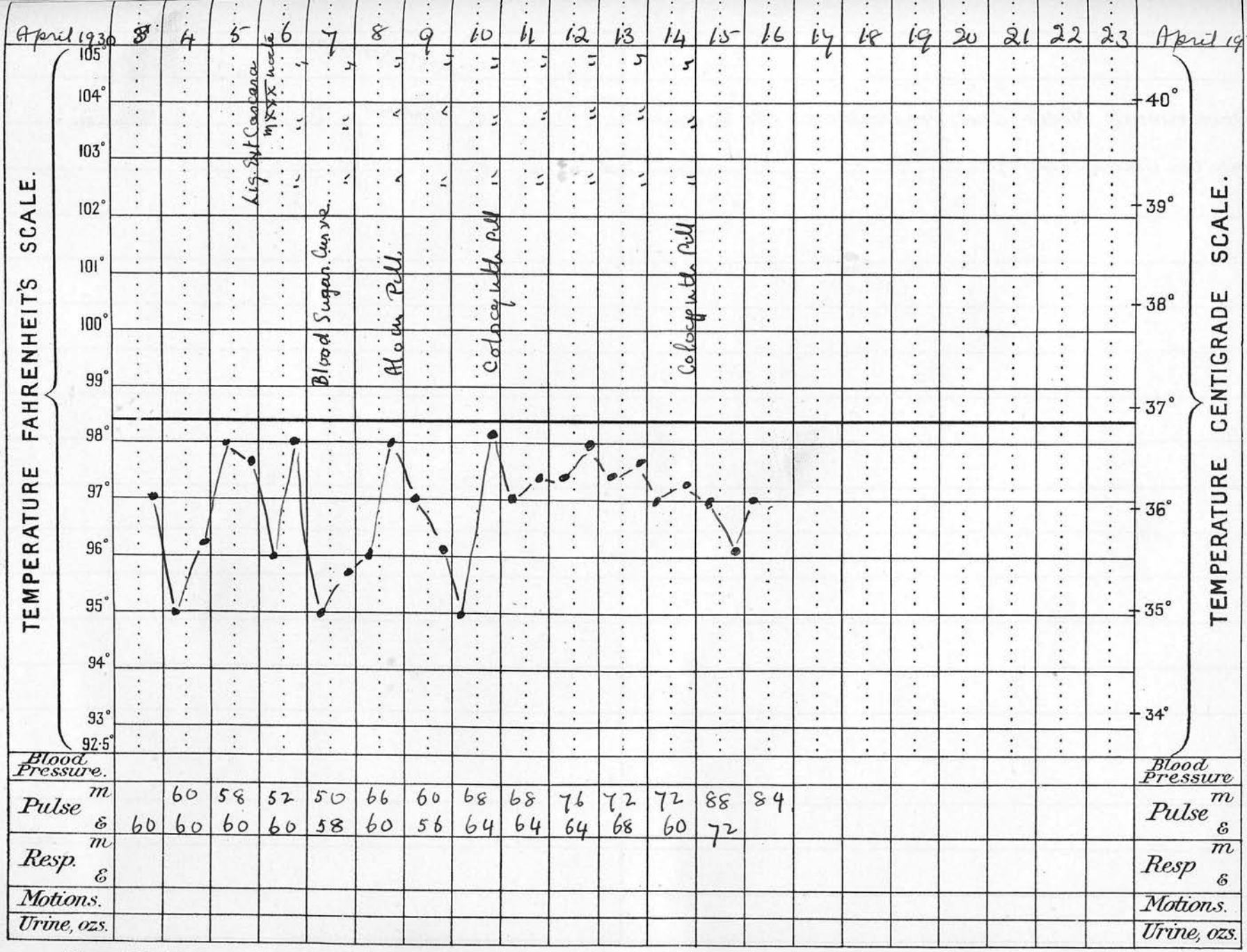
500—c.—1 32.—S. 32.


April 1931
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
April 1931
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
7 p.m. Strychnine m. III T.i.D.
Lumbar puncture.
Blood Pressure. 124/88
Pulse m 88 60 60 60 60 60 68 64 68 76 64 60 64 80 76 72 72 72 74 72 72
Pulse & 80 60 80 64 72 72 64 76 72 72 68 76 78 80 78 76 68 76 76 76
Resp. m
Resp. &
Motions.
Urine, ozs.
Blood Pressure
Pulse m
Pulse &
Resp m
Resp &
Motions.
Urine, ozs.

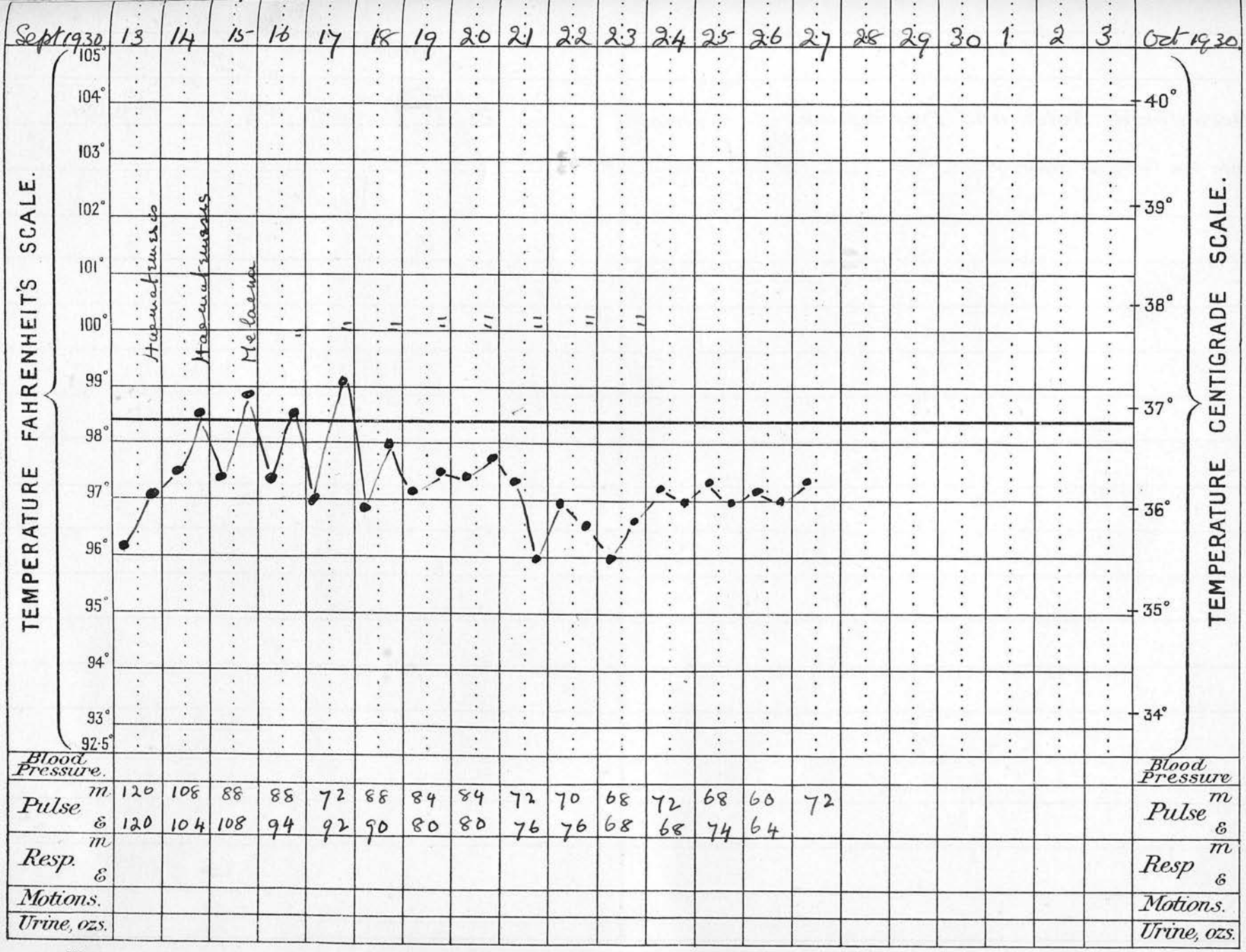
500—c.—1 32.—8. 32.


March 1930
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
Test Meal - Licorice 3ii
Licorice 3ii
Gol. lip.
Licorice 3ii
Bismuth Series.
Blood Pressure.
132/94
120/64
Pulse m 60 60 64 60 60 62 68 68 64 56 64 56 66 76 68 72 72 72 72 84.
Pulse & 56 56 60 56 60 64 84 68 60 60 60. 60 64 72 64. 60 76. 80 80
Resp. m
Resp. &
Motions.
Urine, ozs.

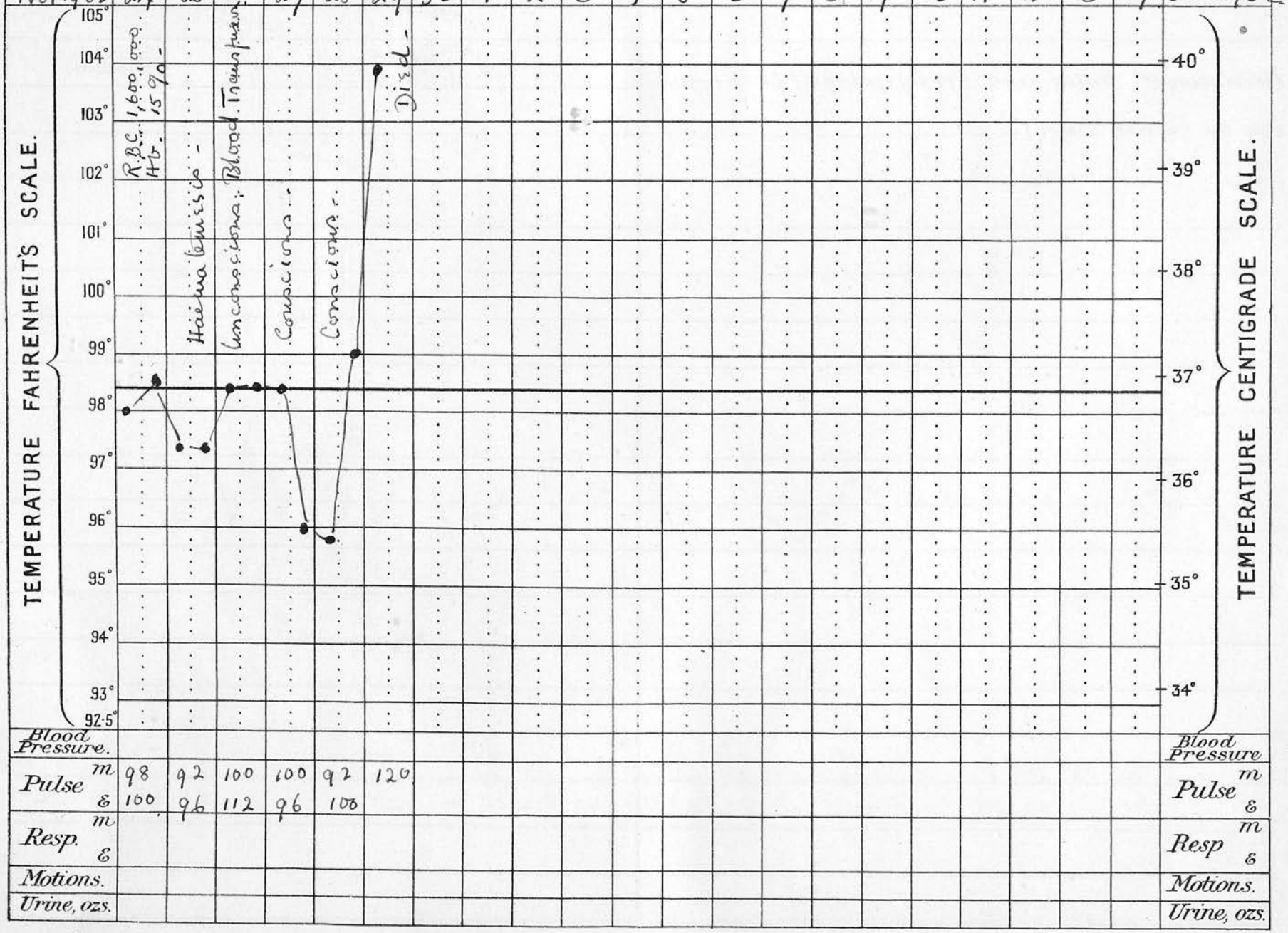
500—c.—1 32.—8. 32.


April 1930
8
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
April 1930
Liq. Syt Cardiac mixture
Blood Sugar Curve
Meal Pill
Calocynth Pill
Calocynth Pill
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Blood Pressure.
Pulse m
Pulse &
60 60 58 52 50 66 60 68 68 76 72 72 88 84
60 60 60 60 58 60 56 64 64 64 68 60 72
Resp. m
Resp &
Motions.
Urine, ozs.

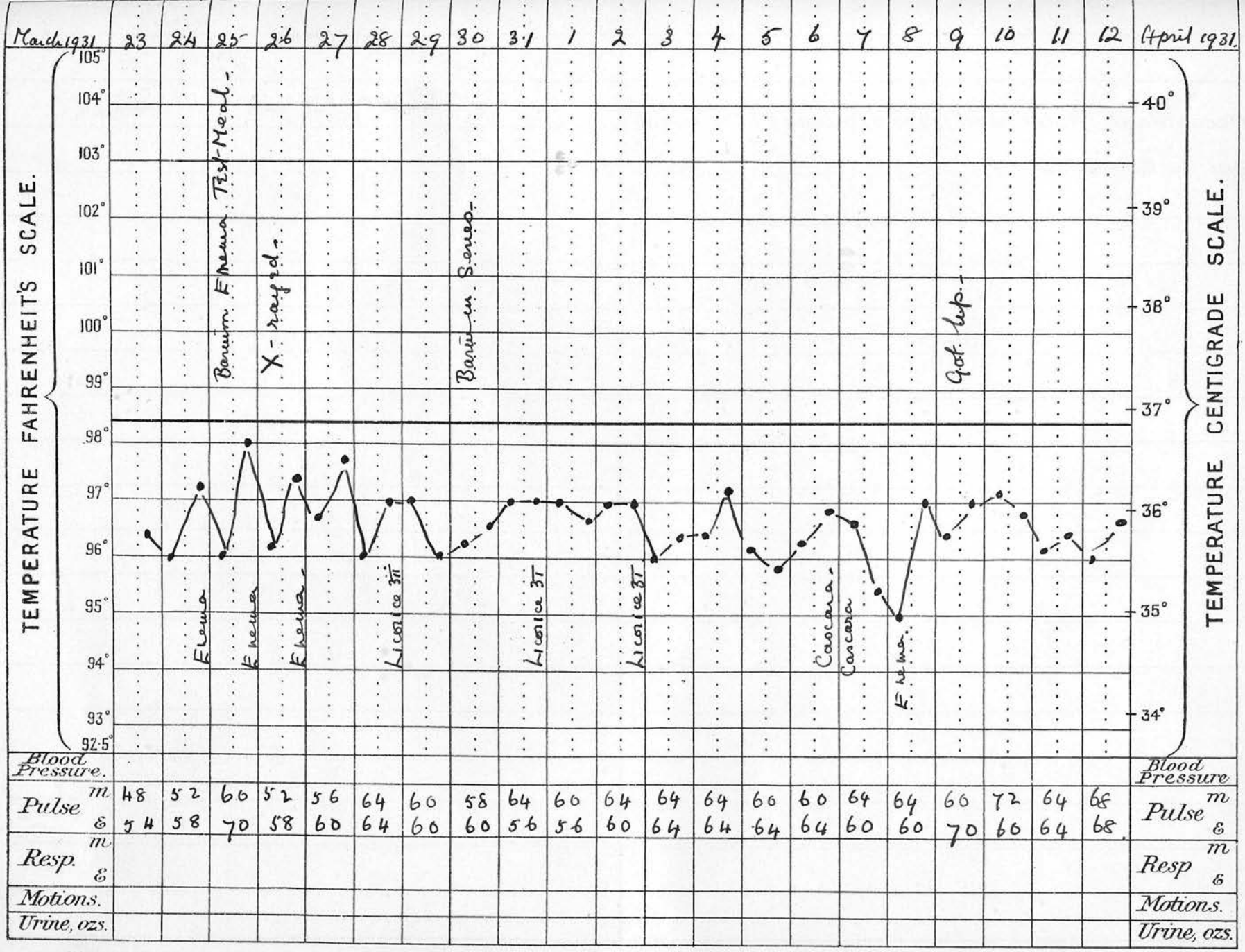
500—c.—1 32.—S. 32.


Sept 1930
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
1
2
3
Oct 1930
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Hæmathrusis
Hæmathrusis
Melæna
Blood Pressure.
Pulse m 120 108 88 88 72 88 84 84 72 70 68 72 68 60 72
Pulse & 120 104 108 94 92 90 80 80 76 76 68 68 74 64
Resp. m
Resp. &
Motions.
Urine, ozs.

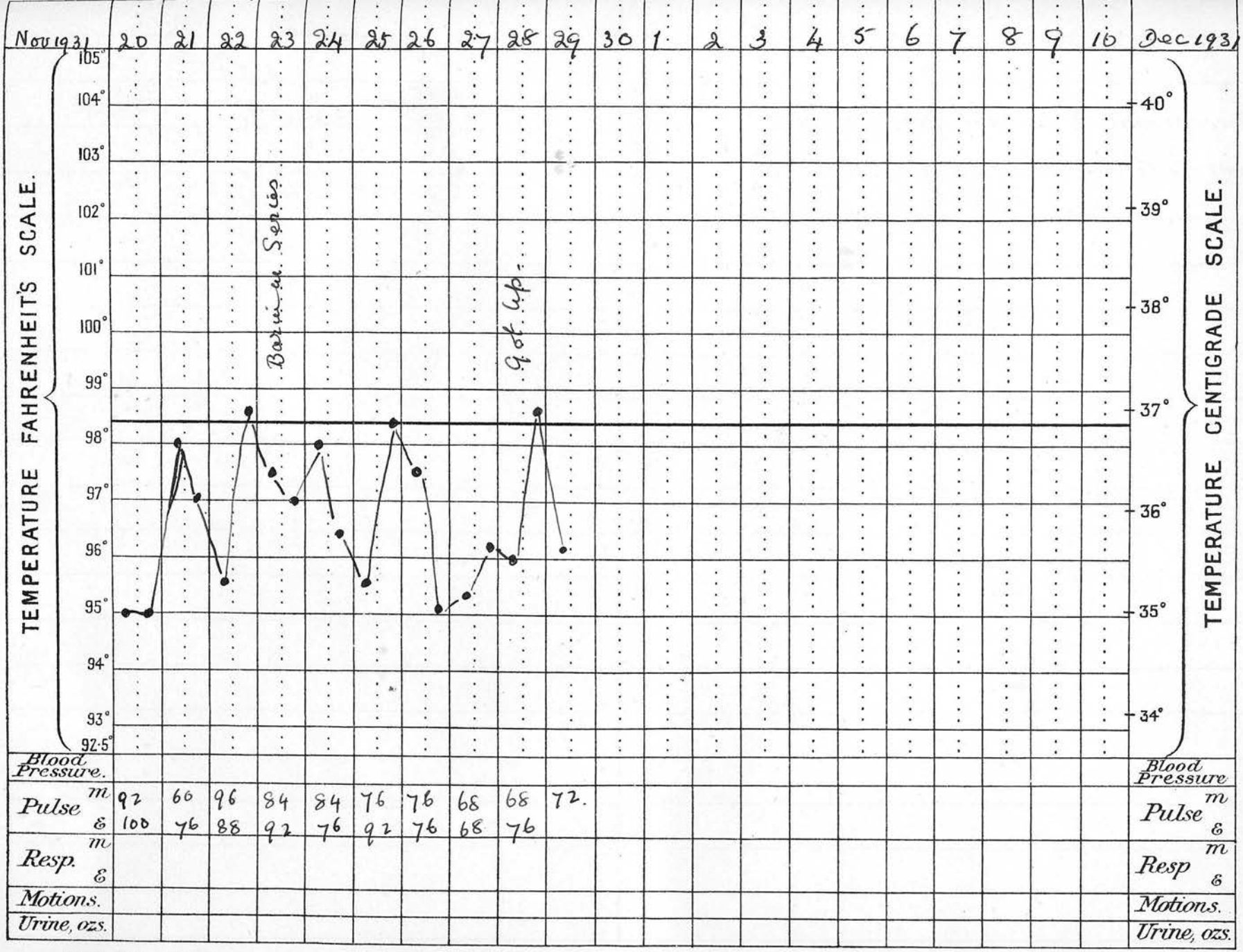
500—c.—1 32.—8. 32.


Nov 1932
24
25
26
27
28
29
30
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Dec. 1932
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
1,600,000
1590
R.B.C.
Hb.
Hæmoglobinuria
Unconscious: Blood Transfusion
Conscious
Conscious
Died
Blood Pressure
Pulse m 98 92 100 100 92 120
& 100 96 112 96 100
Resp. m
&
Motions.
Urine, ozs.

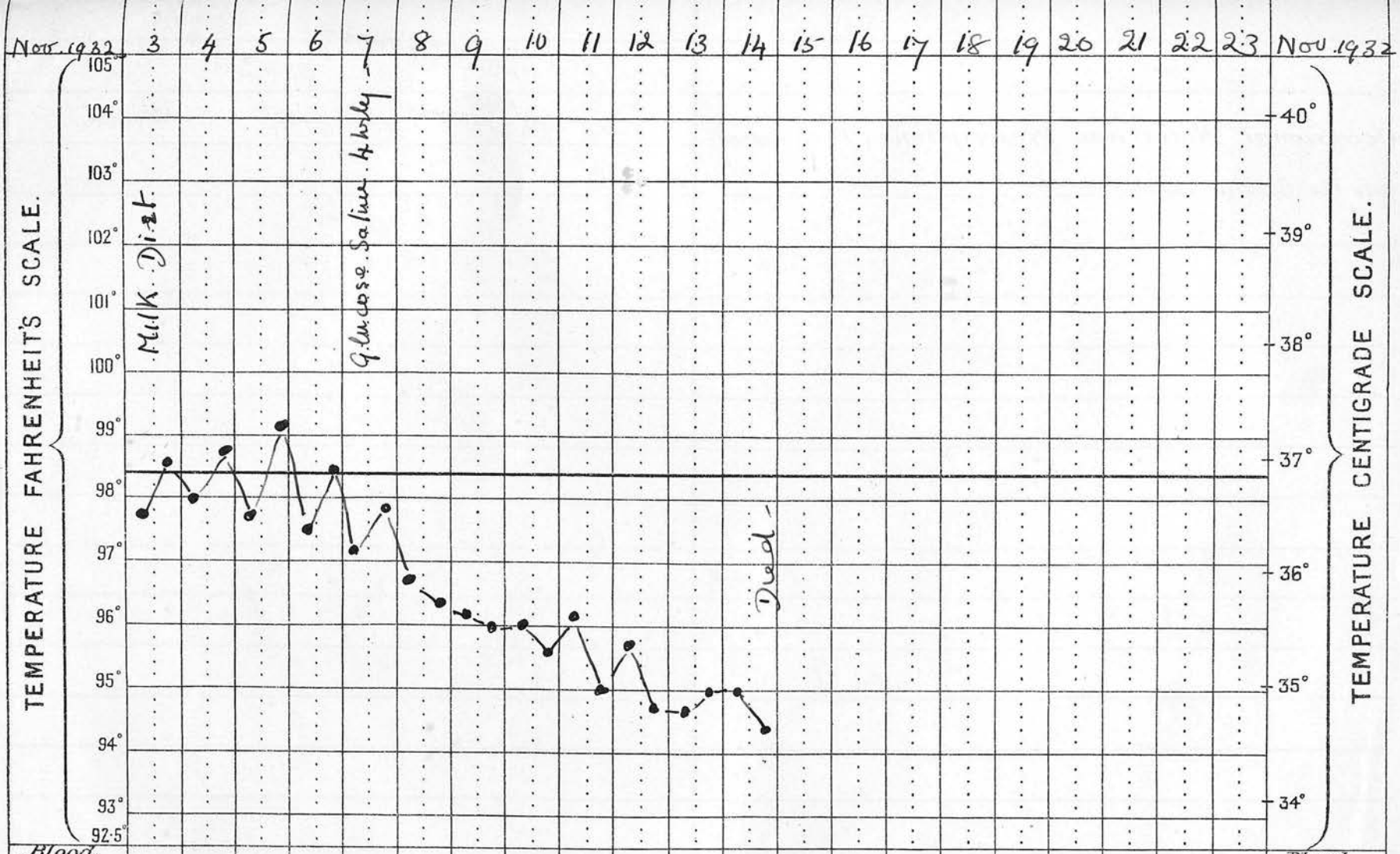
500—c.—1 32.—8. 32.


March 1931
23
24
25
26
27
28
29
30
31
1
2
3
4
5
6
7
8
9
10
11
12
April 1931
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Barium Enema Test Meal.
X-rayed.
Barium Meal.
Got up.
Enema
Enema
Enema
Licorice 3ii
Licorice 3ii
Licorice 3ii
Cascara
Cascara
Enema.
Blood Pressure.
Pulse m
Pulse &
Resp. m
Resp. &
Motions.
Urine, ozs.
48 52 60 52 56 64 60 58 64 60 64 64 64 66 60 64 64 66 72 64 68
54 58 70 58 60 64 60 60 56 56 60 64 64 64 64 60 60 70 60 64 68

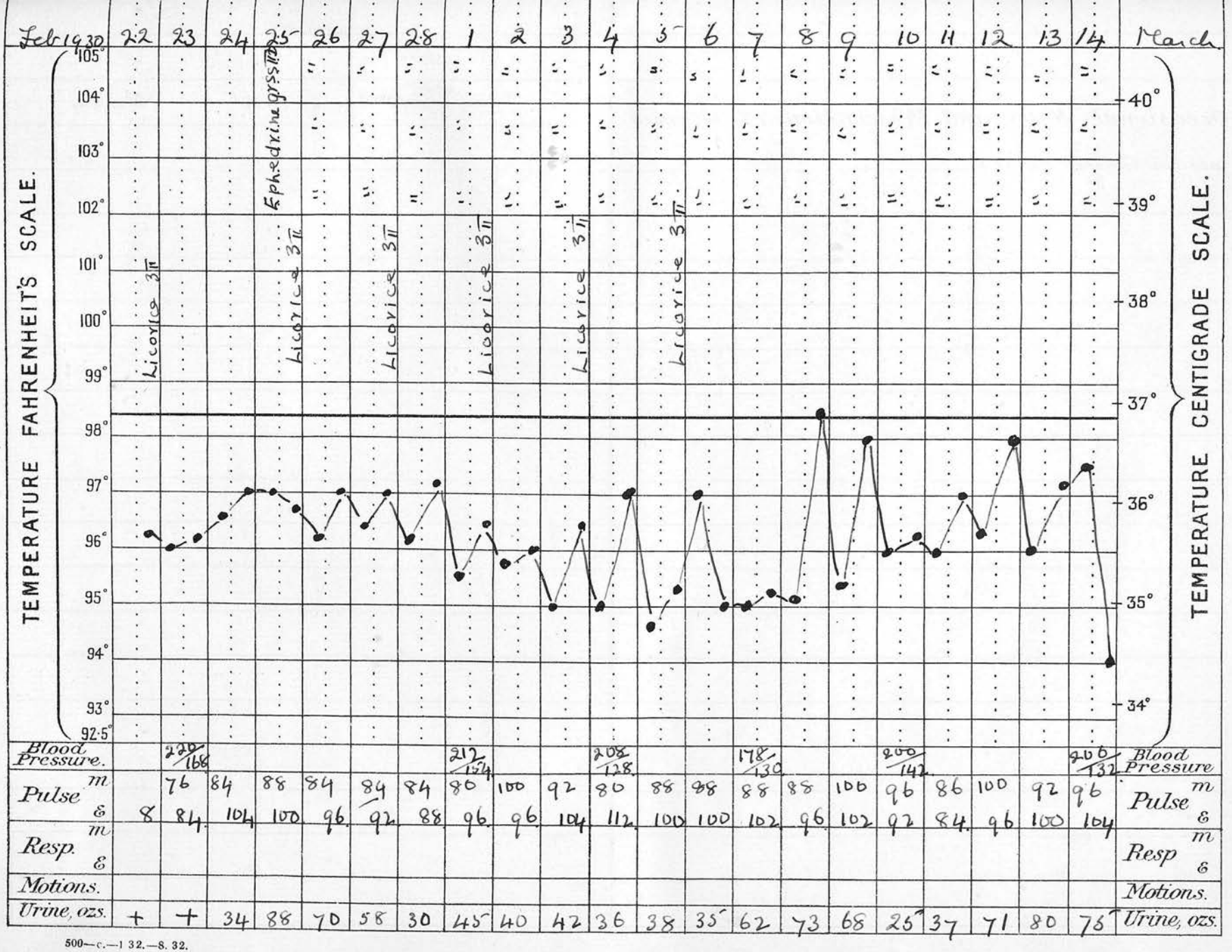
500—c.—1 32.—8. 32.


Nov 1931
20
21
22
23
24
25
26
27
28
29
30
1
2
3
4
5
6
7
8
9
10
Dec 1931
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
Barium Series
Got up.
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Blood Pressure.
Pulse m
&
92
100
66
76
96
88
84
92
84
76
76
92
76
76
68
68
72.
Resp. m
&
Motions.
Urine, ozs.
Blood Pressure
Pulse m
&
Resp m
&
Motions.
Urine, ozs.

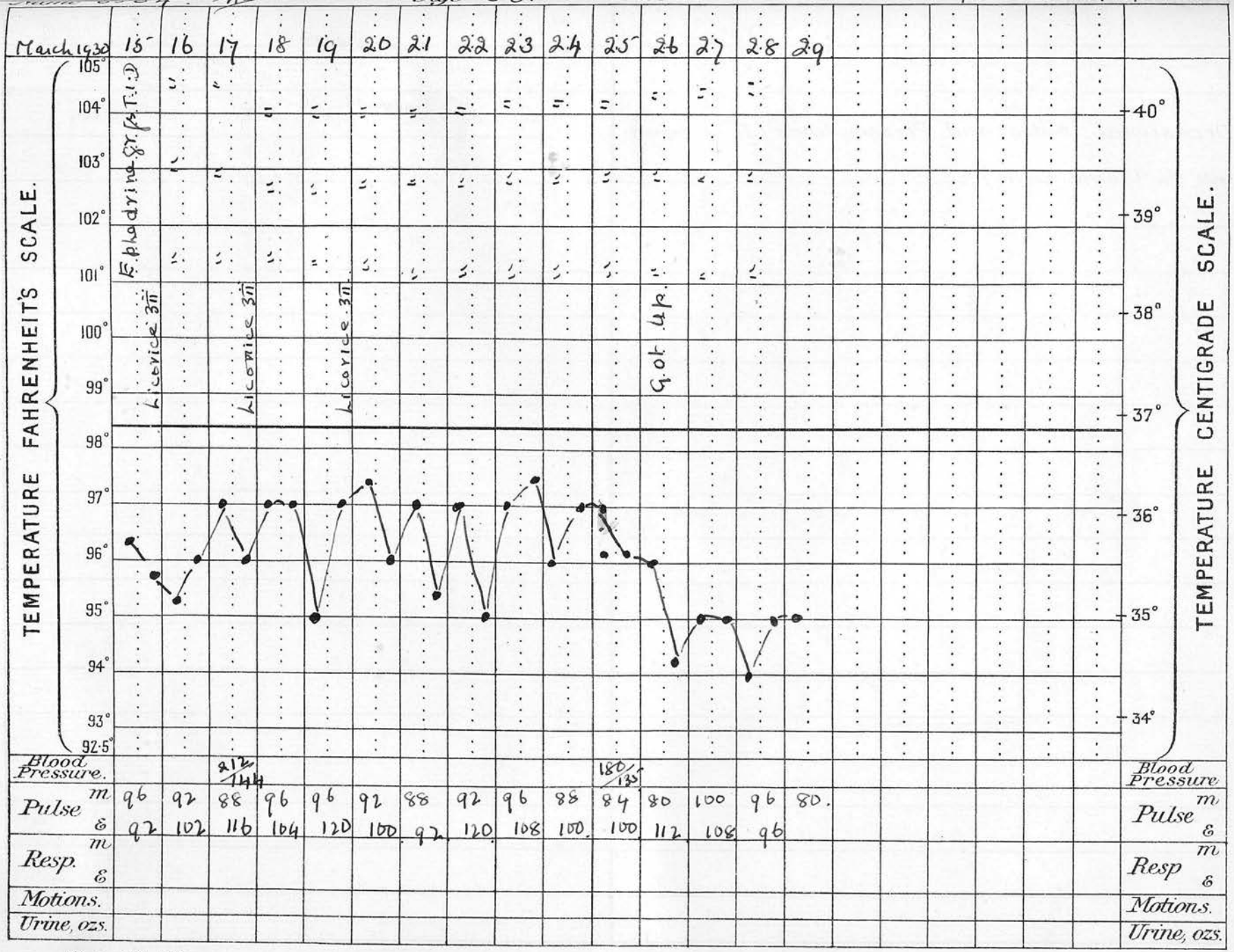
500—c.—1 32.—8. 32.


Nov. 1932
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Nov. 1932
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
Milk. Diet.
Glucose. Saline. 4 hrly.
Dead.
Blood Pressure.
Pulse m 92 96 88 84 92 106 86 100 100 88 88 116
Pulse & 90 94 96 96 108 108 108 104 100 88 100 ?
Resp. m
Resp. &
Motions.
Urine, ozs.
Blood Pressure
Pulse m
Pulse &
Resp m
Resp &
Motions.
Urine, ozs.

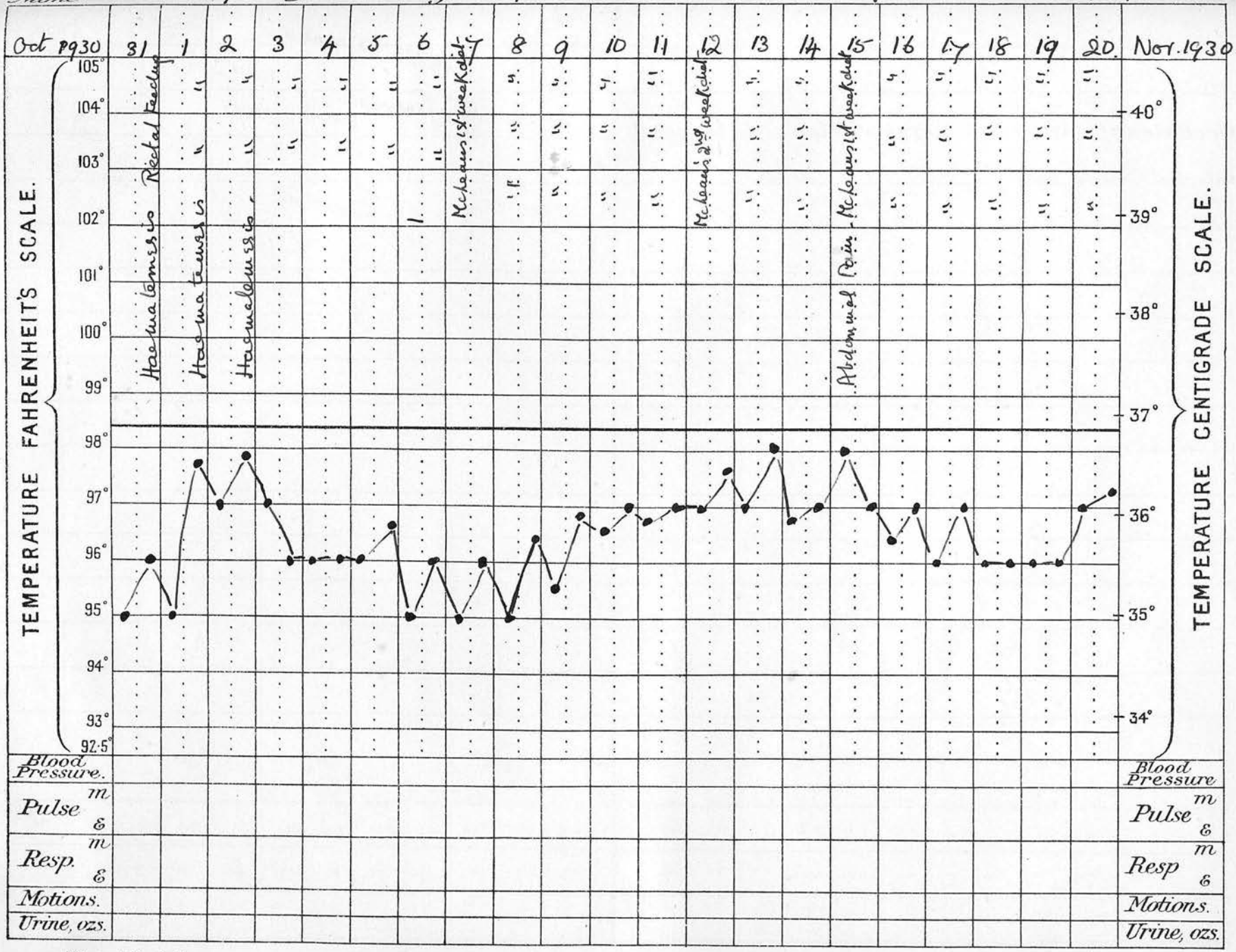
500—c.—1 32.—8. 32.


Feb 1930
22 23 24 25 26 27 28 1 2 3 4 5 6 7 8 9 10 11 12 13 14
March
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
Licorice 3ii
Ephedrine grss iii
Licorice 3ii
Licorice 3ii
Licorice 3ii
Licorice 3ii
Licorice 3ii
Blood Pressure.
220/166
212/154
208/128
178/130
200/142
206/132
Pulse m
Pulse &
Resp. m
Resp. &
Motions.
Urine, ozs.
8 84 104 100 96 92 88 96 96 104 112 100 100 102 96 102 92 84 96 100 104
+ + 34 88 70 58 30 45 40 42 36 38 35 62 73 68 25 37 71 80 75

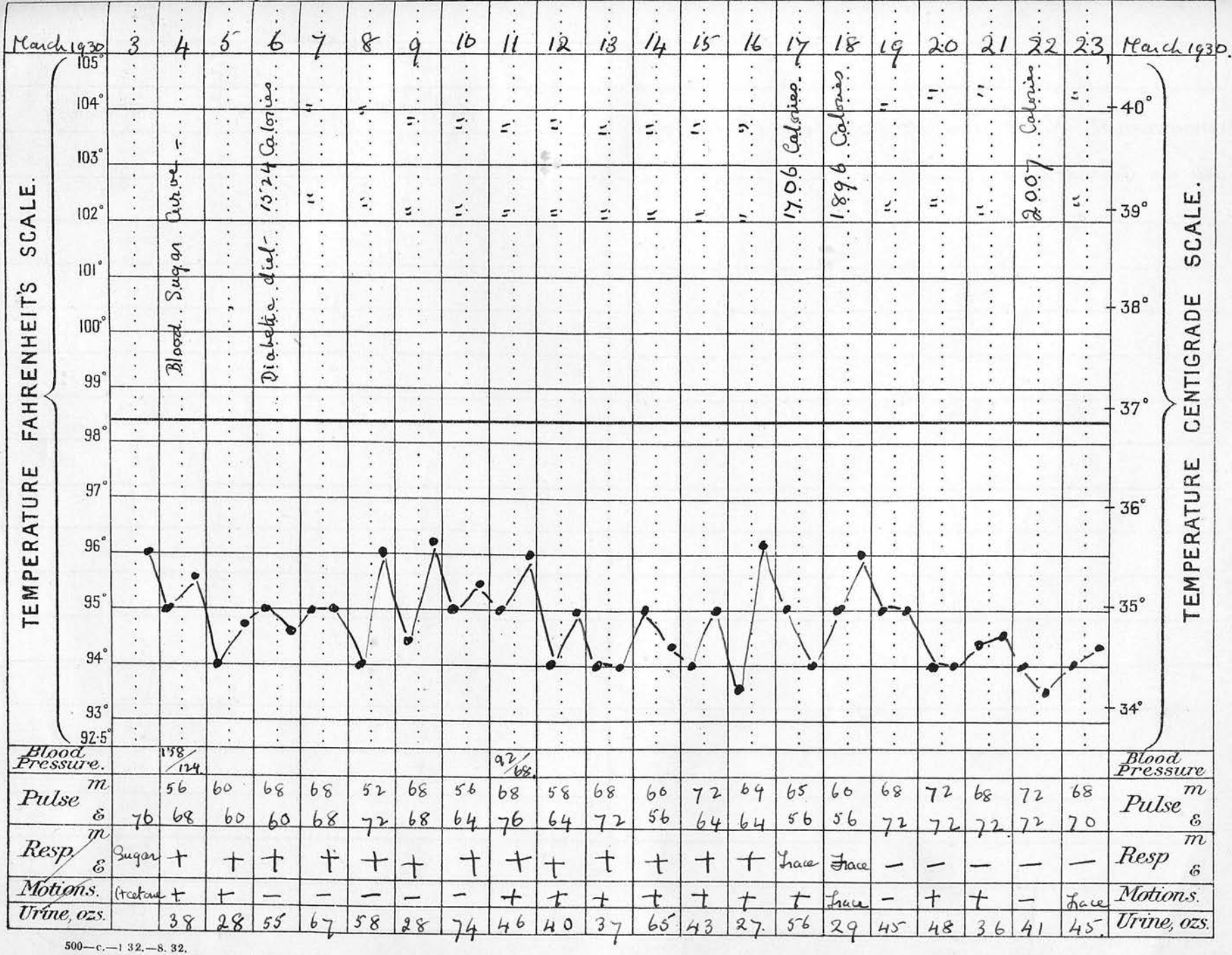
500—c.—1 32.—8. 32.


March 1930
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
E. Phlodrina Sr. p.r.n. T.i.D
Licorice 3ii
Licorice 3ii
Licorice 3ii
G.ol 4p.
Blood Pressure.
212/144
180/135
Pulse m 96 92 88 96 96 92 88 92 96 88 84 80 100 96 80.
Pulse & 92 102 116 104 120 100 92 120 108 100 100 112 108 96
Resp. m &
Motions.
Urine, ozs.

500—c.—1 32.—8. 32.


Oct 1930
31
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Nov. 1930
TEMPERATURE FAHRENHEIT'S SCALE.
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
94°
93°
92·5°
TEMPERATURE CENTIGRADE SCALE.
40°
39°
38°
37°
36°
35°
34°
Haemalamus to Rectal Feeling
Haemalamus is
Haemalamus & to
McLaans 1st tuse Kabat
McLaans 2nd weekdat
McLaans 1st weekdat
Abdominal Pain - McLaans 1st weekdat
Blood Pressure.
Pulse m &
Resp. m &
Motions.
Urine, ozs.

500—c.—1 32.—S. 32.


March 1930
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
March 1930.
TEMPERATURE FAHRENHEIT'S SCALE.
105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°
TEMPERATURE CENTIGRADE SCALE.
40° 39° 38° 37° 36° 35° 34°
Blood Sugar Curve –
Diabetic diet –
15·24 Calories
17·06 Calories.
18·96 Calories
20·07 Calories
Blood Pressure.
158/124
92/68.
Pulse m
Pulse &
Resp m
Resp &
Sugar
Acetone
Motions.
Urine, ozs.
76 68 60 60 68 72 68 64 76 64 72 56 64 64 56 56 72 72 72 72 70
56 60 68 68 52 68 56 68 58 68 60 72 64 65 60 68 72 68 72 68
+ + + + + + + + + + + + + + Trace Trace – – – – –
+ + – – – – – + + + + + + + – + + – Trace
38 28 55 67 58 28 74 46 40 37 65 43 27 56 29 45 48 36 41 45

500—c.—1 32.—8. 32.

Name 63 25 . 11 Age 65 . Disease Diabetes Mellitus . Result V. M. Improved.

March 1930	24	25	26	27	28	29	30	31
	Diabetic Diet 2007 Calories	"	2094 Calories	"	"	2292 Calories	2413 Calories	
Blood Pressure.								
Pulse m	72	76	80	56	72	64	72	
Pulse &	64	68	64	68	72	72	68	
Resp. m	Sugar —	—	—	—	—	—	—	
Resp. &	Acetone trace	—	Trace	—	—	—	—	
Motions.								
Urine, ozs.	64	37	81	48	40	46	51	

TEMPERATURE FAHRENHEIT'S SCALE. 105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°

TEMPERATURE CENTIGRADE SCALE. 40° 39° 38° 37° 36° 35° 34°

Blood Pressure. Pulse m & Resp. m & Motions. Urine, ozs.

500—c.—1 32.—8. 32.

Name [illegible] Age 48 yrs. Disease [illegible] Anxiety Neurosis. Result V. M. Improved

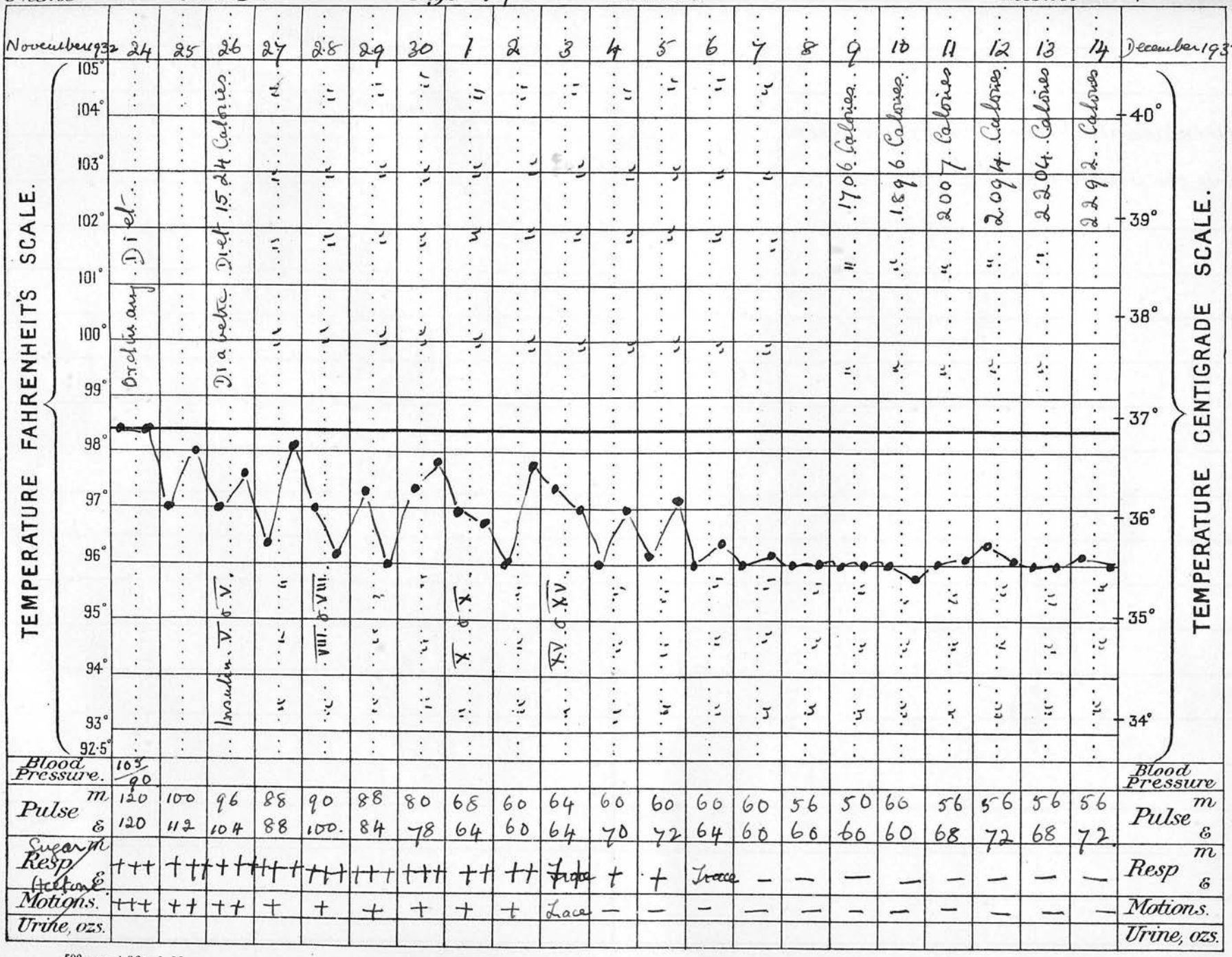
March 1930	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	April 1930
	Diet Ordinary	"	"	Diet 1524 Calories	Diet Diabetic	"	"	"	"	Insulin V at 6 p.m.	Insulin V at 6 a.m. 1706 Calories	7 a.m. "	" 1896 Calories	" 2007 Calories	" 2094 Calories	"	" 2204 Calories	" 2292 Calories				
Blood Pressure.							125/85															Blood Pressure
Pulse m		92	68	76	80	72	72	76	76	72	60	84	72	84	68	88	88	84				Pulse m
Pulse &	92	72	72	76	72	72	72	80	72	68	72	76	76	68	72	80	80					Pulse &
Resp m	Sugar	+	+	+	Trace	+	+	+	+	—	Trace	+	—	—	—	—	—	—				Resp m
Resp &	Acetone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				Resp &
Motions.		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				Motions.
Urine, ozs.	+	+	+	32	45	48	36	54	32	40	45	50	41	48	37	31	56.					Urine, ozs.

TEMPERATURE FAHRENHEIT'S SCALE. 105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°

TEMPERATURE CENTIGRADE SCALE. 40° 39° 38° 37° 36° 35° 34°

500—c.—1 32.—8. 32.

Name 8563. Age 27. Disease Diabetes Mellitus - Result Improved.



500—c.—1 32.—8. 32.

Name 8572 - Age 53. Disease Pernicious Anaemia Result Improved.

December 1932	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21.	December 1932
Blood Pressure.	125/75																					Blood Pressure
Pulse m	112	72	70	72	80	68	68	64	76	64	60	56	64	64	68	56	56	56	64	56.		Pulse m
Pulse &	72	72	88	76	72	72	66	68	66	60	60	60	60	64	54	60	60	56	60			Pulse &
Resp. m &																						Resp m &
Motions.																						Motions.
Urine, ozs.																						Urine, ozs.

TEMPERATURE FAHRENHEIT'S SCALE. 105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°

TEMPERATURE CENTIGRADE SCALE. 40° 39° 38° 37° 36° 35° 34°

Test Meal.

Liconic 3ij

Cascara.

Cascara.

500—c.—1 32.—8. 32.

Name 6628- Age 11- Disease Acute lymphatic leukaemia Result worse -

April 1930	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	April 1930
Blood Pressure.																						Blood Pressure
Pulse m	132	112	104	108	108	120	128	124	120	126	120	132	112	120	120	124	120	124	128	132	124	Pulse m
Pulse &	120	108	100	100	120	120	124	112	116	124	112	134	114	126	126	124	124	128	120	138	136	Pulse &
Resp. m																						Resp m
Resp. &																						Resp &
Motions.																						Motions.
Urine, ozs.																						Urine, ozs.

TEMPERATURE FAHRENHEIT'S SCALE. 105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°

TEMPERATURE CENTIGRADE SCALE. 40° 39° 38° 37° 36° 35° 34°

April 17: RBC. 3,150,000 hiemo 3T

April 18: W.B.C. 63,200. Hb. 20%

April 19: Chest aspirated 28 ozs.

April 24: Chest aspirated 28 ozs.

April 28: Chest aspirated 28 ozs.

April 4: Chest aspirated 20 ozs.

500—c.—1 32.—8. 32.

Name 6597. Age 38. Disease Traumatic amputation stump - Left middle finger Result Transferred Surgical ward

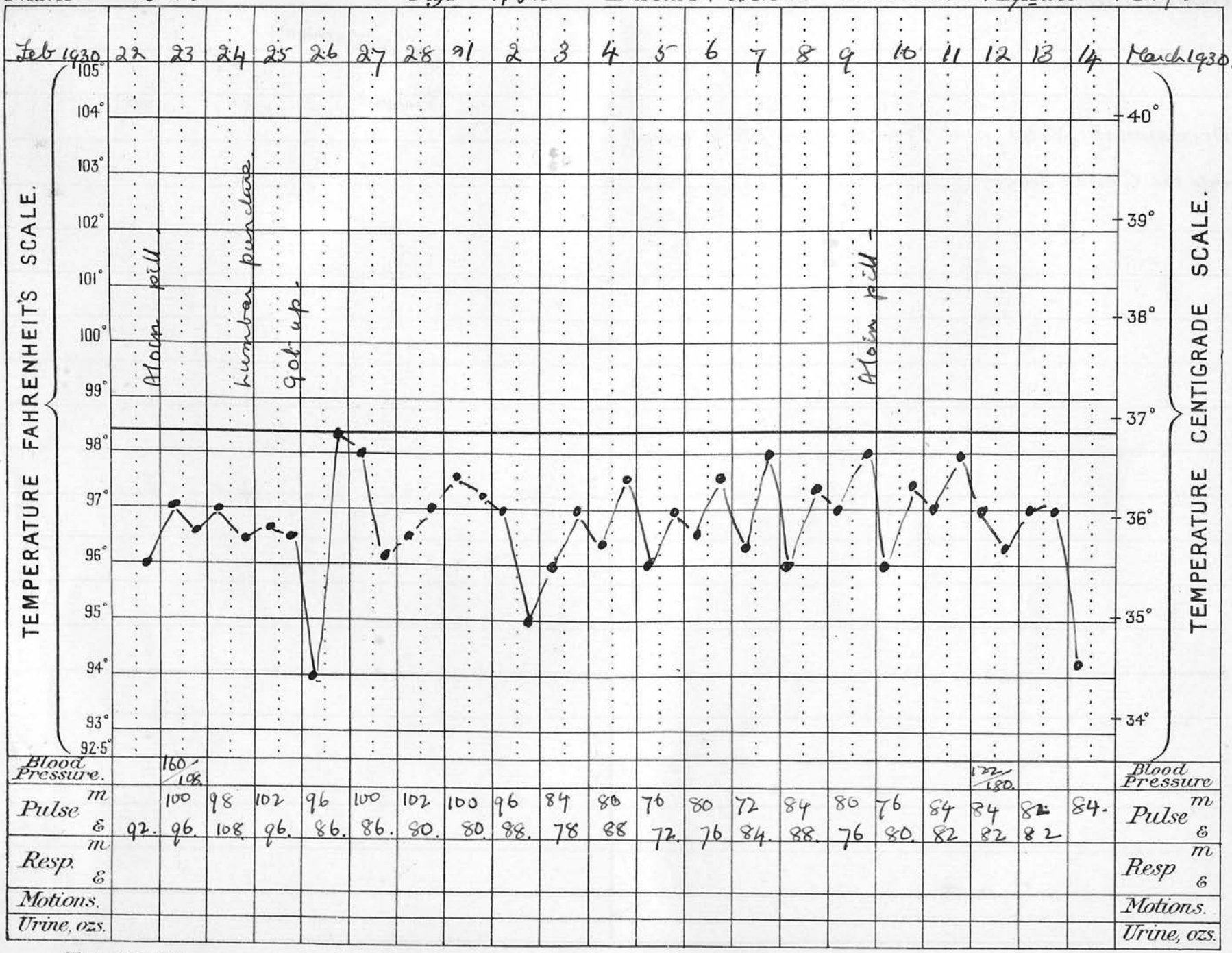
April 1930 -	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	April 1930
TEMPERATURE FAHRENHEIT'S SCALE.			Lumbar Puncture.			Aldin Pill		I.V. 0.2 Gm. Neosalvarsan														TEMPERATURE CENTIGRADE SCALE.
Blood Pressure.																						Blood Pressure
Pulse m		60	56	58	64	78	88	88														Pulse m
Pulse &	50	60	64	60	60	64	68	72														Pulse &
Resp. m																						Resp m
Resp. &																						Resp &
Motions.																						Motions.
Urine, ozs.																						Urine, ozs.

105° 104° 103° 102° 101° 100° 99° 98° 97° 96° 95° 94° 93° 92·5°

40° 39° 38° 37° 36° 35° 34°

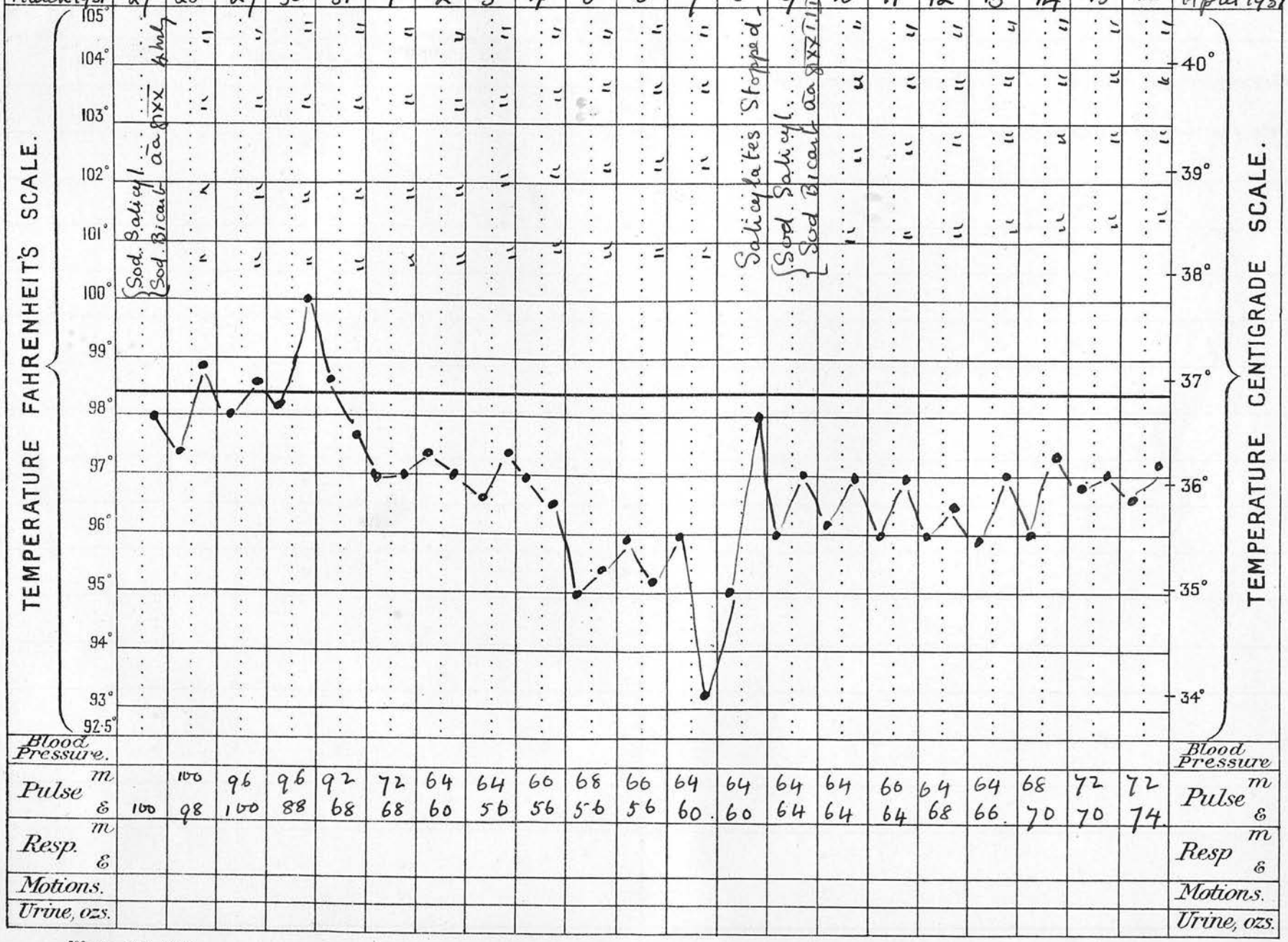
500—c.—1 32.—8. 32.

Name 6501. Age 42. Disease Peroneal Muscular Atrophy Result 1.S.9.



500—c.—1 32.—S. 32.

Name 7311. Age 35. Disease Rheumatic Fever Result Recovered



500—c.—1 32.—8. 32.